THE IRON AGE

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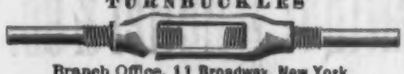

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Ad. on Page 15

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Arrow and Nitro Club brands were carried by the thousands to the game fields last fall. Their popularity and the partiality of shooters for them is not accidental. True merit in manufacture, from primer to crimp, has won such a confidence in the U. M C. trade-mark that it means A PREFERENCE.

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See page 55

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THE AMERICAN TUBE & STAMPING COMPANY

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GERMAN SILVER
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RIVERSIDE, N. J.

THE IRON AGE

New York, Thursday, March 21, 1907.

A Large Pittsburgh Double Pulley Lathe.

The tool illustrated in Fig. 1 impresses one first by its size, but further examination reveals even more of interest in its unique construction and mechanical movements. It is the largest double pulley lathe ever built in this country, being capable of turning two pulleys 96 in. in diameter by 72-in. face at one time, and weighing complete about 50 tons, and was built for the Jones & Laughlin Steel Company, Pittsburgh, Pa., by the Pittsburgh Machine Tool Company, Allegheny, Pa. An appreciation of the size of the lathe may be had from the half-tone, Fig. 1, which shows the tool in comparison with a man of ordinary stature, but this general view does not very clearly indicate the construction or method of operating. Figs. 2 and 3, which are front and end elevations respectively, will give a better understanding of the mechanical features.

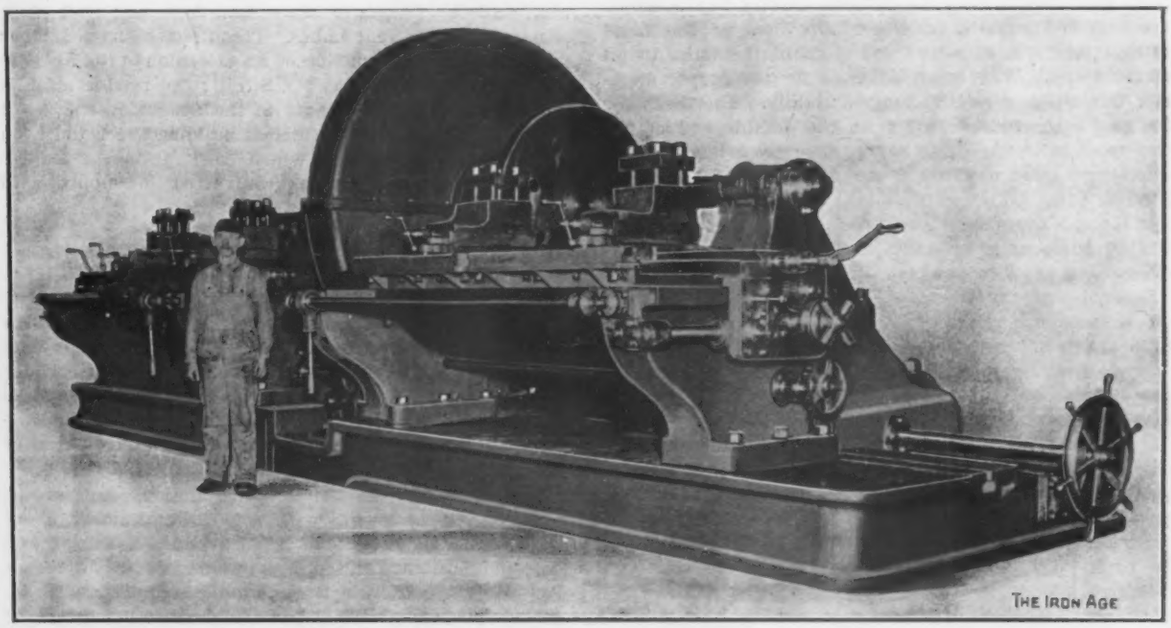


Fig. 1.—General View of the 96-In. Double Pulley Lathe Built by the Pittsburgh Machine Tool Company for the Jones & Laughlin Steel Company.

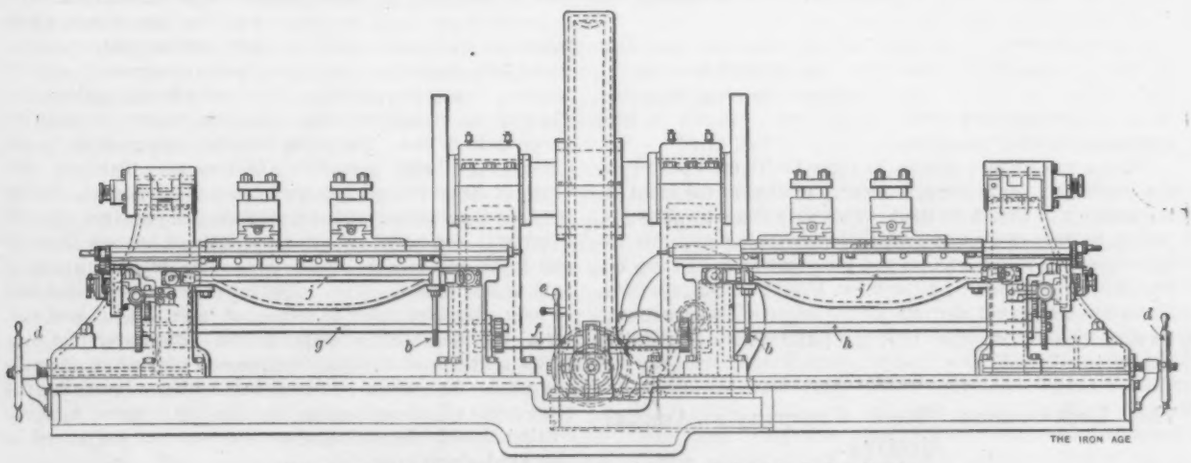


Fig. 2.—Front Elevation of the 96-In. Pittsburgh Double Pulley Lathe.

Both face plates are mounted on one spindle, which is 14 in. in diameter in the bearings, and is driven at its center by a large worm wheel. The latter is 96 in. in diameter, and is in turn driven from below by a worm, which runs in a bath of oil. As may be seen in Fig. 3 the worm is on a transverse shaft extending to the rear, where it is connected through gears with a 50-hp. motor, which provides the drive. In the drive a change of gearing is provided, which is operated by the lever *e*, Fig. 2, shown at the left side of the worm gear housing, this lever operating a clutch which throws the different gears in and out to give fast or slow speed. The main driving worm is double threaded and the thrust is taken up with a ball thrust bearing. On the same shaft with it is a smaller worm at the outboard end, which provides the drive for the longitudinal feeds of the tool carriages. This worm meshes with a worm wheel on a short shaft, *f*, Fig. 2, which in turn through spur gears drives the longitudinal shafts *g* and *h*. The opposite ends of these shafts through spur gears and bevel gears drive short splined shafts on the outer ends of each rail, one of these being shown at *i*, Fig. 3.

The pulleys which the machine is intended to turn are of the standard construction, cast in half. After each pulley has been bored it is mounted on an arbor

and inserted in the machine. This arbor is a taper fit in the spindle of the lathe, and the tail end of the arbor runs in a bronze bearing in the tailstock. The tailstocks are adjusted by pilot wheels, *d*, shown at each end of the lathe. As may be seen in Fig. 3 the back of the lathe is open, which facilitates placing the heavy work in position. The caps of the tail bearings are hinged, so that they can be swung back and opened to receive the tail ends of the arbors when the work is inserted. There is also a step bearing in each tail cap for taking the end thrust, this being adjustable when the arbor is in position. Drivers are inserted in holes in the face plates, which are steel, in proper position to engage with the arms of the pulleys.

In front of each pulley there are two tool rests, these being carried on a long slide or rail, which can be adjusted in and out to accommodate different diameters of pulleys. The in and out movement is effected by screws, bevel gear driven from the the long shaft *j*, Fig. 2, which are revolved at will in either direction by the hand ratchet levers *b*, shown at the front of the lathe in all of the views. When once adjusted for the proper diameter this slide or rail is clamped rigidly. The feeds for the tool rest are operated from the outside end of the two cross rails, the drive being taken from the shafts *i*,

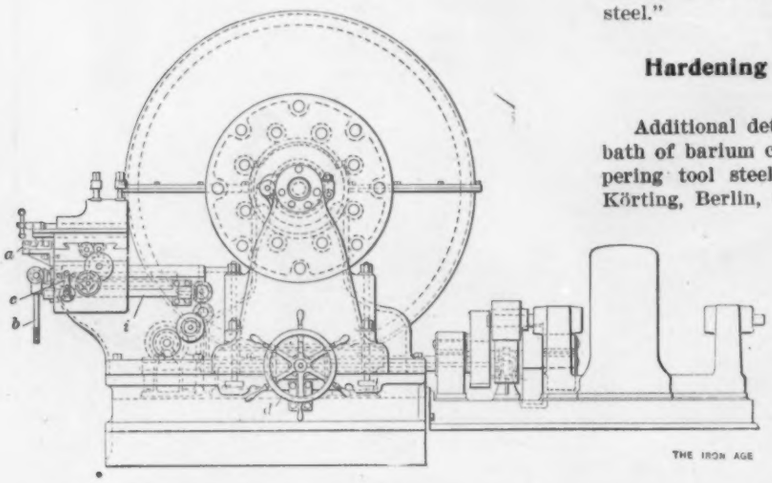


Fig. 3.—End Elevation of the Lathe, Showing the Drive.

before referred to. The longitudinal feeds are operated by screws, spur gear driven from the splined feed shaft, and thrown in and out by a friction. Reverse of these feeds is accomplished by the hand lever *c*, shown on the apron, in Fig. 3.

When the pulleys are to be turned with crowned faces the automatic crowning attachment, located at the front of the slide at *a*, Fig. 3, is used. This attachment can be adjusted to turn different crowns, there being a roller in the compound slide, which runs in a groove in the top of the crowning device. As the view, Fig. 3, shows, the tool slides are supported entirely at the front of the machine, leaving the back open, so that the pulleys may be readily swung in place.

The Lackawanna Steel Company's Annual Meeting.

The annual meeting of the stockholders of the Lackawanna Steel Company was held March 13 at the company's plant at West Senaca, N. Y. Directors whose terms expire in 1907 were re-elected until 1910 as follows: Mark T. Cox, B. S. Guinness, Adrian Iselin, Jr., John J. Mitchell, H. A. C. Taylor, M. McK. Twombley, Cornelius Vanderbilt. The directors whose terms expire in 1908 are: E. A. S. Clarke, G. R. Fearing, Jr., Edmund Hayes, Samuel Mather, D. O. Mills, M. Taylor Pyne, Robert B. Van Cortlandt, John J. Albright, C. Ledyard Blair, Warren Bellano, J. G. McCullough, James Speyer, Moses Taylor and Henry Walters. The directors met and re-elected the officers, as follows: E. A. S. Clarke, president; Moses Taylor, vice-president; C. H. McCullough, vice-president and general manager; Fred F. Graham, secretary; J. P. Higginson, treasurer, and Marshall Lapham, comptroller.

President Clarke submitted his report for the year ended December 31, 1906, which differed but slightly from the preliminary statement issued early in February and which was published in *The Iron Age* of February 7. The most important change was a further deduction from earnings of $400,159.28 for improvement and extraordinary replacement funds, making $1,500,000 for the year. President Clarke also said:

"There was formed during the year the Seneca Transportation Company, to operate, under charter, vessels on the Great Lakes, for transporting the company's products. The entire capital stock, $5,000 par value, is owned by the Lackawanna Steel Company. During the year there was shipp . in this way 168,743 gross tons of finished material, the largest known shipments of steel products ever made by vessels in one season from any steel plant situated on the Great Lakes. The directors have further authorized the construction of an extension to No. 7 blooming mill, to be known as No. 8 mill; the product of this mill will be shipped in part to the Seneca Iron & Steel Company, a corporation which is building sheet and hoop mills nearby at Buffalo, which corporation the Lackawanna Steel Company has contracted to supply with steel."

Hardening Steel in Fused Electrolytes.

Additional details are at hand, of experience with a bath of barium chloride in an electric furnace, for tempering tool steels. The furnace is that of Gebrüder Körting, Berlin, Germany, and its construction and the method of using barium chloride were described in *The Iron Age* of January 3, 1907, page 17.

It is stated that by experimenting with a furnace chamber about 6½ in. square and 7 in. deep, and inserting pyrometers to different depths at nine different spots, L. M. Cohn has found the temperature of the top layer of the fused salt varying only between 1108 and 1110 degrees C.; in the bottom layer the temperature was throughout 1123 degrees, and in the intermediate layer also uniformly 1120 degrees C. Milling tools weighing up to 5 lb. have been heated up to 850 degrees C. in four minutes. A piece of Novo steel, outside dimensions 5 x 1½ x 1 in., weighing 3 lb., has been heated to 1300 degrees C. in 62 sec. The tools may be preheated up to red glow before being placed in the furnace. Primary currents of 50 or 100 periods and 200 volts are used. When keeping the furnace at its maximum temperature of 1300 degrees C. for 10 hr. a day, about 2 lb. of barium chloride has to be replenished every day. The furnace lining is said to last about a year. The iron electrodes do not last so long. Barium chloride seems, so far, to be the best material for the extreme temperatures. For lower temperatures mixtures of barium chloride and potassium chloride are used. The crust of fused salt which adheres to the steel peels off at once when the steel is dropped into the cooling liquid. Local superheating is not to be feared in this kind of furnace.

The Madison Coke Company, House Building, Pittsburgh, Pa., has purchased 50 acres of coal lands in the Connellsville District, being part of the Eastern outcrop of the Pittsburgh vein. It has built a battery of 20 coke ovens and will complete its plant of 50 ovens within two or three months, the grading for which is partly completed and most of the material on hand. Water supply is secured from natural springs on the property, giving an abundance of the best water for its coke ovens and boiler house. The plant is located on the Pennsylvania Railroad, and the company will make a specialty of high grade foundry coke. E. C. Powers is president; W. H. Taliaferro, vice-president, and Henry L. Coe, secretary and treasurer.

The American Radiator Company's Report.

The eighth annual report of the American Radiator Company, covering the operations of the fiscal year ending January 31, 1907, presents a statement from which the following comparison of income account is drawn:

	1907.	1906.
Net profits	$864,281	$833,917
Dividend preferred stock (4 per cent.)	210,000	210,000
Balance	$654,281	$623,917
Dividend common stock (4 per cent.)	200,000	196,013
Surplus	$454,281	$427,904

The general business sheet, as of January 31 last, shows:

Assets.

	1907.	1906.
Real estate, plant, &c.	$7,976,641	$7,600,853
Additions during year	392,649	475,788
Totals	$8,369,290	$8,076,641
Less depreciation	100,000	100,000
Balance	$8,269,290	$7,976,641
Cash	308,541	376,121
Notes receivable	15,986	12,004
Accounts receivable	2,535,568	2,151,953
Raw material, supplies and finished products	1,370,332	1,626,370
Totals	$12,499,717	$12,143,089

Liabilities.

Preferred stock	$3,000,000	$3,000,000
Common stock	5,000,000	4,922,300
Accounts and bills payable	1,115,645	1,290,998
Surplus	3,384,072	2,929,791
Totals	$12,499,717	$12,143,089

Following is a statement of the quick assets and liabilities as of January 31 last:

	1907.	1906.
Total quick assets	$4,230,427	$4,166,448
Less accounts and bills payable	1,115,645	1,290,998
Net quick assets	$3,114,782	$2,875,450

President Clarence M. Woolley presents an accompanying statement which, in part, is as follows:

"Additions were made to the manufacturing properties, and refinements were introduced which brought about an increase of output and placed our operations on a stronger and more advantageous foundation. Several new selling branches, equipped with ample warehouse capacity, were established at important trade centers. Experience has emphasized the benefits derived by the diverse locations of plants and branch warehouses. Our ability to distribute an immense amount of merchandise from many natural shipping centers, instead of from a single point of production, offers decisive advantages to our patrons, and encourages the growth of the business along economic lines.

"The business of the company has reached proportions which greatly exceed its total capital. The first year of our corporate existence the volume of business was less than one-half of the capitalization. It is therefor obvious that the larger measure of business can be transacted under conditions which accrue to the greater advantage of the public and of the company.

"The phenomenal business conditions which prevailed during the last fiscal year created abnormal acitivity in the metal markets and rendered it difficult to obtain supplies. Our own selling prices were not advanced as rapidly or to the same extent as were the prices of raw materials. Thus were we aided in enlarging the volume while securing a satisfactory return on the total business transacted.

"During periods of exceptional prosperity we believe it is incumbent upon merchants and manufacturers to make preparation for less fortunate eras. The company has endeavored to safeguard itself in many ways, looking forward to the time when its operations may be less favored by general conditions. Conspicuous among the steps which have been taken in this regard is the reservation of an insurance fund to protect the company against a decline in the value of its finished products, and during the past few years the sum of $300,000 has been deducted from the profits for that purpose.

"Manufacturers consider it vital to protect themselves against the disappearance of value in their properties by process of fire, and for that purpose fire insurance is purchased. It is just as important that safeguards should be applied to protect the product asset, which, in the natural order of events, is subjected to a greater menace than the plant asset, by the inevitable fluctuations in market conditions, and in years of great prosperity insurance funds should be established, so that, when less favorable conditions prevail, there will not be placed upon the current operations an artificial burden of absorbing the shrinkage in product values. We believe it wise and prudent, therefore, to exact sufficient tribute during seasons of general prosperity, in order that we may avoid the embarrassments which might ultimately be imposed were not this policy adopted.

"In addition to the product value insurance fund referred to, there has been deducted from earnings the sum of $100,000, with which we have established a guaranty fund for bad accounts. This surrounds the accounts receivable asset with the same safeguard that has been applied to the inventory of products. Both of these funds can be drawn upon only by order of the Board of Directors, and will be reserved as special safeguards, should it become necessary to apply them to the purpose for which they were created.

"The foreign companies are in a state of healthy development. We still continue to realize many advantages on account of our ability to supply the demand in the various countries, from manufacturing plants which we have located with special reference to natural conditions. Had we attempted to supply the foreign demand from domestic plants, it would have been impossible to develop the business in the rapid and substantial manner that has been accomplished by the policies adopted.

"The plant which was built in England last year is in operation, and the results are as favorable as were anticipated. The plant in Germany is being further extended to meet the larger demand created by an extensive and enterprising sales organization. These extensions are well warranted by the results which have been accomplished. The plant in France is being very largely increased to meet the demand placed upon it by selling methods, which likewise have been applied to the situation in that country, where the opportunity for continued growth is relatively as favorable as in England and Germany.

"It is our purpose to continue aggressively the development of our business in Europe. While the results already achieved are substantial and gratifying, we look forward to the further expansion of these enterprises, believing that they will ultimately prove of great advantage to our shareholders."

The Frick Coke Company's Operations.

The H. C. Frick Coke Company has planned the erection of four large coke plants during the present year. At York Run the Collier plant is projected with 400 ovens. At Prospect, on the Monongahela Railroadu, another plant of 250 ovens will be constructed. The Phillips plant, at Thaw Station, on the Pennsylvania Railroad, will have 400 ovens instead of 250 as at first planned. At Roncoe, where coal has been mined for some time, 350 ovens will be erected. These plants will add many thousands of tons to the production of the company, while the plan is also seriously considered of firing old ovens at abandoned plants, hauling the coal for a long distance in order to do it.

The Frick Coke Company has purchased the surface of the J. Seaton Collier farm of 100 acres in Georges Township, Fayette County, and will build the Collier plant there with 500 ovens and 250 houses. The reported price paid for the farm was $100 an acre. The company owned the coal under the land. The Frick Coke Company will this summer change many of the oven fronts at its various plants for the purpose of installing coke drawing machinery. The labor situation has been so acute in the past several months that the company has decided that the best way to provide against it is to use the patent coke drawer. Large orders for brick and material to change the oven fronts have been placed.

Proper Packing.*

Handling of Machinery and Parts for Export.

Paul Roux, a member of the American Chamber of Commerce of Paris, with a view to facilitate commercial transactions between the United States and France, prepared the following paper on packing machinery for export, in which will be found information that will be expecially valuable to exporters of every description of merchandise requiring careful handling:

This paper will give little new information to those familiar with the importation of machinery, nor to American manufacturers who, through their own experience and that of their agents, are conversant with what a machine tool goes through, from its completion and test in the home factory, until finally running in some French establishment. It may perhaps be of value to those who are seeking a foreign market, and who have yet to learn the requirements of export trade, and for this reason is submitted to the American Chamber of Commerce of Paris, whose principal object is to facilitate commercial transactions between the United States and France.

An American machine has much to pass through between the producing factory and its final arrival at the works of the purchaser—cartage, transportation by rail and by sea, transshipment, loading and unloading, custom house examination, and perhaps storage for considerable periods in French warehouses.

Packing comprises the series of operations which have for object the preservation of the machine in good condition up to the time of final delivery. The care with which these operations are carried out and combined may not only largely affect their own cost, but also the expenses of transportation, custom dues, and storage; and these expenses, in the case of machinery exported from the United States to France, may amount to a considerable percentage of the selling price.

Preparation of Machines.

All machine tools after having been completely assembled, inspected, and tested in practical running should be more or less completely dismounted before packing. It is impossible to lay down fixed rules in this regard, as the extent to which a tool should be dismounted varies with each machine, or rather with each class of machinery. The manufacturer must take into consideration the resistance of the tool and its various parts to rough handling in transportation, and decide upon what extent it should be dismounted to insure safety. It must be remembered that while the packing case will protect a machine against blows which it may receive when in a normal position it offers little protection against side or abnormal thrusts resulting from an overhanging position. Great care must therefore be taken to see that no part of the machine is in contact with the sides of the case that is not fully able to withstand the rough handling to which the case can be subjected. The feet of a lathe bed, the base of a shaper, or of a milling machine, may be readily broken by the packing case falling, even lightly, on one of its corners, and without the latter showing any external evidence of the fall.

A most important consideration to be taken into account when dismounting a machine is its volume or cubage when packed for shipment. Marine freights are generally reckoned at so much per ton weight, or per 40 cu. ft., at the option of the ship. The exporter has, therefore, every interest to see that the weight, which can not of course be varied, does not occupy a space greater than 40 cu. ft. per ton. Nearly all machines, when not dismounted, make up into packages greatly exceeding 40 cu. ft. per ton, and even under the best conditions can rarely be packed in cases equivalent in weight and volume. It may therefore be laid down as a general rule that every effort should be made to reduce the volume as much as possible by dismounting all projecting parts which increase the over-all dimensions of the packages. On the other hand, the difficulty of assembling parts requiring accurate adjustment must be taken into account, and the exporter must use his best judgment in deciding at what point the difficulties of setting up the machine will outweigh the economy realized by reducing the volume of the package.

Maximum Weight and Charges.

This question of reducing the cubage is worthy of the closest attention of American manufacturers, as the freight from the United States to French ports is extremely high by the direct lines, while the extra duties charged upon goods arriving indirectly more than counterbalance any savings in transportation charges. The cost of transportation is, therefore, an important factor in the cost of a machine when delivered in France, and the economy realized by paying close attention to the volume of packages may form an appreciable portion of the profits.

The maximum weight of each package must also be carefully considered; freight charges, computed, as has already been shown according to weight or volume, as may be more profitable to the carriers, are increased very considerably when the weight of individual packages exceeds a certain limit. For instance, the rate for packages exceeding 4½ tons in weight is double that for packages weighing less than 2 tons. This increase varies according to the steamship line, but is imposed by all, and must therefore always be taken into account.

In addition to its effect on the actual freight charges, the total weight per package when exceeding a maximum of about 2 tons involves extra charges for loading and unloading. These charges vary according to the equipment of the ports of departure and arrival, and are often very considerable, as when it is necessary to move the vessel under a dock crane, when one is available, or to get up steam on a floating crane to handle the heavy weights.

To sum up, it will generally be advantageous to dismount a machine weighing over 2 tons in order to pack it in several packages each weighing less than this maximum. Care must be taken, however, that the total tonnage or cubage of the several packages does not exceed that of a single case, and that the difficulties of assembling the machine at destination do not more than counterbalance the economy realized on transportation charges. It is also profitable to dismount a machine weighing either more or less than 2 tons, when this secures a considerable reduction in volume, and when, as is generally the case with machine tools, the cubage exceeds the limit of 40 cu. ft. per ton.

Dismounting Fragile Projections.

It is generally necessary to dismount fragile projecting parts, even when this will have no influence on the volume or weight of the packages. While it is true that these parts will be properly protected by the packing case during transportation, still they run the risk of being bent or broken during the operation of unpacking and setting up the machine. It is therefore preferable to remove and pack them in one or more separate boxes secured in the principal case. All delicate or fragile parts which can not be removed should be carefully protected against rough handling during unpacking. All screw threads should be carefully covered with wood or rags, all tapped holes, oil holes, and in general all openings through which dirt can reach the interior of the machine should be carefully closed with wooden plugs.

Manufacturers are especially urged to tag all pieces which may have been removed with labels fully explaining their position on the machine. This precaution may appear exaggerated and useless if it is considered that the machines will only be assembled by mechanics understanding their construction, but certain American machines are novelties to many factories, and besides, before arriving at the works of the purchaser, the machine has to pass through the custom house, and sometimes has to be exhibited in a salesroom. Under these conditions it is necessary that people unfamiliar with the type of machine should know exactly the position and function of each of the detached parts.

Protection of Finished Parts.

When a machine tool has been properly dismounted and divided for packing the very important operations of protecting the finished parts against rust must be carried

* From the *Daily Consular and Trade Reports* of the Department of Commerce and Labor.

out. Lack of care and attention in this operation may have very serious consequences. It is not necessary to point out what serious effects rust may produce on the finished parts of a machine; it should be remembered that after having passed three or four weeks en route, often inadequately protected from the rain and always subjected to the effects of dampness, a machine may remain during long months in warehouses before being unpacked, and it is easily seen in what condition a machine may be found if the finished surfaces have not been protected against rust by a thoroughly efficient coating.

There are two things to be considered in this question of protection—the nature of the protective coating and the method of applying it. Without stating what the composition of the coating should be, it is urged that this should be sufficiently fluid at the time of application to permit it to reach all parts of the surfaces to be covered; that it should be entirely free from all trace of acid in order that it may not attack the metal. It should dry very rapidly, in order that no surface should be exposed accidentally through chafing en route or careless handling in the custom house. It should be readily dissolved with oil, petroleum, or turpentine when the machine is ready to be set up at its final destination.

Damage from Rust.

The coating should of course be applied carefully to all polished surfaces which can be reached by the atmosphere, and care should be taken that the coating is intact after the machine has been packed—that is to say, when the packing case has been constructed around the machine. It very often happens that the packers carefully coat all polished parts of a machine, but that more or less of the coating is removed during the handling necessary for placing the machine in its packing case, or by contact with the interior braces. The effects of this negligence are generally very serious, because the parts thus exposed are promptly attacked by rust, and the machine can not be put in perfect condition, even if this be possible, except by long and costly work.

Polished surfaces which are in contact with each other should not be coated; they will be sufficiently protected by the lubricating oil applied for running the machine. Likewise, oil holes should be free from the coating composition, as it is most difficult to completely remove it later on.

Finally, it is recommended that this coating be not applied to any finished parts, which, by their position in the machine, are completely protected from all exterior contact, and which are so situated that the removal of the protecting coat would be difficult. For these parts the employment of vaseline or solidified oil is suggested, as this can be readily removed, and even if not removed can not affect the working of the machine. The only precaution to be taken is that the vaseline and oil should be entirely free from acid. As an example, inclosed gearing, such as in the head stock of a lathe, can be protected in this manner against rust. Vaseline or solidified oil may also be employed for protecting such small detached pieces as may be inclosed in a separate box.

Construction of Cases.

The packing case must fulfill two requirements—it must effectually protect the machine against all shocks and injury during transportation and must facilitate the handling of the machine; that is to say, the packing case is at the same time a covering and a vehicle.

In order to fulfill this double requirement the case should be specially constructed, and without fixing general rules, as the details of construction will vary considerably with the forms of different types of machines, the essential requirements will be given for packing cases containing a machine which is of a weight too great for moving by hand.

The bottom is the most important part of the case, considered as a vehicle. If this is well designed it will not only facilitate handling during transportation from the United States to France, and contribute greatly to removing risk of injury, but it is the only part of the case which can be utilized in France, if, after remaining in showrooms, it is to be shipped by rail to its final destination. The bottom should therefore be sufficiently strong to carry the total weight of the machine without the assistance of any other part of the case when balanced on a roller. It should be constructed with two longitudinal battens in order that the case may be moved on rollers when cranes are not available, and these battens should be beveled at the ends to facilitate their employment. Transverse planking, spiked to the battens, forms the bottom of the case. On the bottom, constructed as indicated, two frames should be built around the machine, dividing the length of the case in three parts, in such manner as to support the pressure of ropes or chains when handling with cranes or other hoisting apparatus. These frames will, at the same time, act as supports for the interior braces, and as lateral supports in case the package is laid on its side, which often happens in spite of instructions. Around these principal elements are built the sides, ends, and top of the case, which are designed simply for protecting the machine generally. In constructing the packing case the remarks already made regarding its volume must be borne in mind. This volume is computed from the over-all dimensions, and often a bolt-head or a batten badly placed will largely increase the cubage.

If the bottom of the case has been given the special form herein indicated, there is little chance that it will be placed otherwise than upright; it is, however, better to add the usual indications "top," "bottom," etc.

Customs Examination.

In designing the packing case it is very necessary to make provision for the examination of the machine in the custom house, and even for removing it completely. It is absolutely necessary in all events to arrange an opening in one of the sides or in the cover through which the nature of the machine may readily be seen. This opening should be large enough to permit the examination of all parts of the interior of the case and to permit the passage of a lantern if required. It should be closed by a cover secured with screws.

To allow for removing the machine completely from the packing case, in order to determine the net weight of the machine for the custom house, it should be arranged so that the packing and the unpacking may be readily and rapidly accomplished without it being necessary to injure the panels. For this it is necessary that the top and one of the sides be secured with screws instead of nails, and that the position of the interior battens and braces be indicated externally in order that the screws and nails fixing them may be readily found.

It is especially recommended that the interior of packing cases be not lined with paper. Such a lining prevents the circulation of air, and if the machine be packed in a damp atmosphere the humidity, which under other circumstances would have evaporated, will attack the metallic parts however slightly exposed. Special attention is called to this point, as practical experience has demonstrated that effects have resulted from lining cases quite unforeseen by the exporter.

Lists and Drawings.

It is very necessary that the machine should be accompanied by a detailed list of the detached pieces contained in the packing case, which, on unpacking, will show whether any part has been lost during transportation or during the custom house examination. It is most indispensable that this list should be accompanied by a drawing or cut, showing clearly the machine when assembled and ready for work. The cut should also show all accessories which are indispensable to the machine—for example, countershafts, keys and wrenches, change gears, etc. This cut, in lieu of which a drawing should be supplied, will permit the custom house inspectors to convince themselves that the detached pieces actually form part of the machine; otherwise these pieces may have to pay duties at a higher rate than the machine itself. If the machine has been taken apart and made up into several packages, a cut or drawing should be placed in each case, as in general all of the packages are not opened in the custom houses.

These papers, lists, cuts, and drawings should be carefully enveloped in waterproof paper and tacked inside the case near the small opening already mentioned in

order that they may be readily accessible. When the dimensions are such that the papers can be attached to the cover of the opening this should be done.

Exterior Marks.

The packing finished, it only remains to properly mark the cases for identification. All manufacturers know that a case should be marked legibly with identifying marks and numbers, the gross and net weight, the volume, and the name of the port of discharge, the latter in legible lettering at least 2 in. in hight. It is only necessary to call their attention to the necessity of marking the absolutely exact net weight, as even a very small difference between the weight stated and the true weight may cause difficulties in the custom house, and perhaps the imposition of fines. The volume is determined by taking the three dimensions over all. In addition to these marks, indispensable for the transportation of the package, and which should when possible be placed on the sides of the case, it is recommended that on each end of the package a short designation of the contents be added. These last-named inscriptions are absolutely necessary when the package is to be stored in a warehouse, as they permit of the immediate identification of a case containing a given machine. The inscription should not only indicate the type of machine, but should also give its size or number.

Finally, exporters are urged to paint a black circle around the heads of all nails and screws which should be removed in order to unpack the machine with the least work and without injuring the panels and bracings.

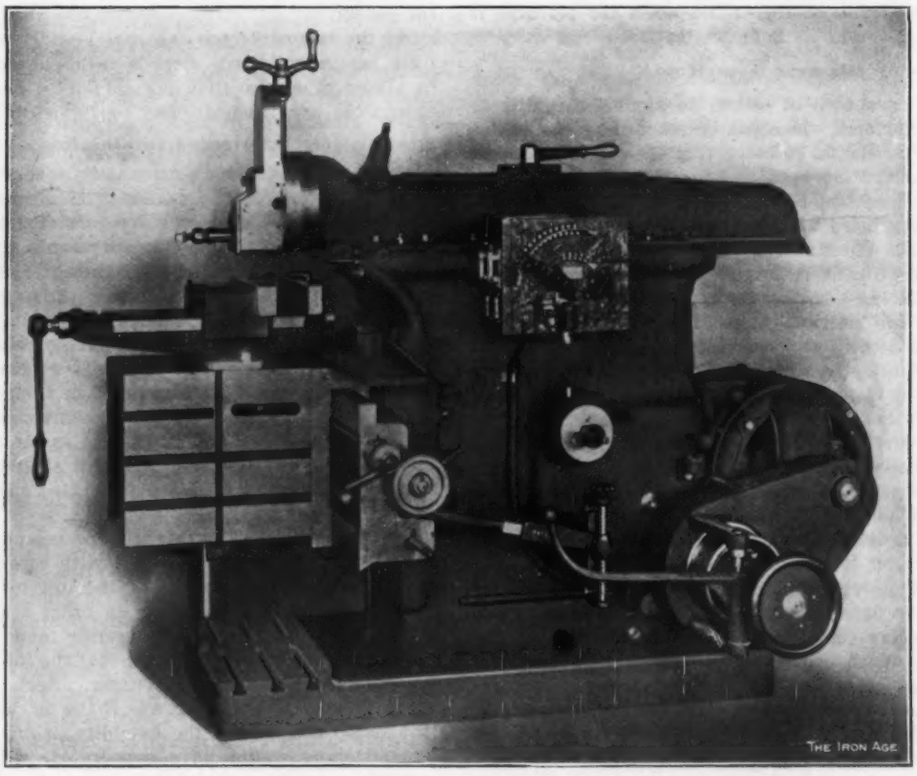
If the foregoing suggestions are carefully followed manufacturers will greatly diminish the risk of injury or deterioration during transport, and will spare the consignee of the machine and the purchaser in France the trouble, delay, and expense which the loss, damage, or breakage of an essential part of the machine will cause him. The importance of properly bracing and securing a machine in its packing case has not been insisted upon, as the methods must vary greatly with each type of machine. The manufacturer should know how to arrange the bracing that the stresses to which the case may be subjected will be properly distributed and only brought to bear on such parts of the machine as may be capable of resisting them.

The Reliance Heater & Supply Company has removed its offices and stock from 541 Wood street to 228 Second avenue, Pittsburgh, Pa.

A Gould & Eberhardt Motor Driven Shaper.

Individual motor drive has become so common that each new example of it scarcely calls for passing attention, unless it has unique or especially commendable features. The fundamental requirements are pretty generally understood and the manner of meeting them more or less standardized, although already designers are taking sides on disputed points, such as location of motor, allowable lengths of belt where a belt is used, best speeds, best means of control, &c. The handling of the various phases in the problem of applying a motor to the driving of a shaper appear to have been more than ordinarily well worked out in the case illustrated, for which credit is due to the builders of the shaper, Gould & Eberhardt, Newark, N. J. The equipment is one made for the National Tube Company, Lorain, Ohio, and consists of a 24-in. high-speed, quick-stroke shaper, a General Electric Company's direct-current motor with variable speed control through a Ward Leonard starting box and rheostat, and a Morse silent chain.

As will be seen, the motor is mounted on the back of the main column of the shaper, thus making it integral with the tool, and at the same time keeping it well up from the floor where it is out of the way of dirt and sweepings. The compact cylindrical construction of the motor adapts it well to the machine so that a symmetrical unit results. The power is transmitted through the chain to the main shaft of the shaper.



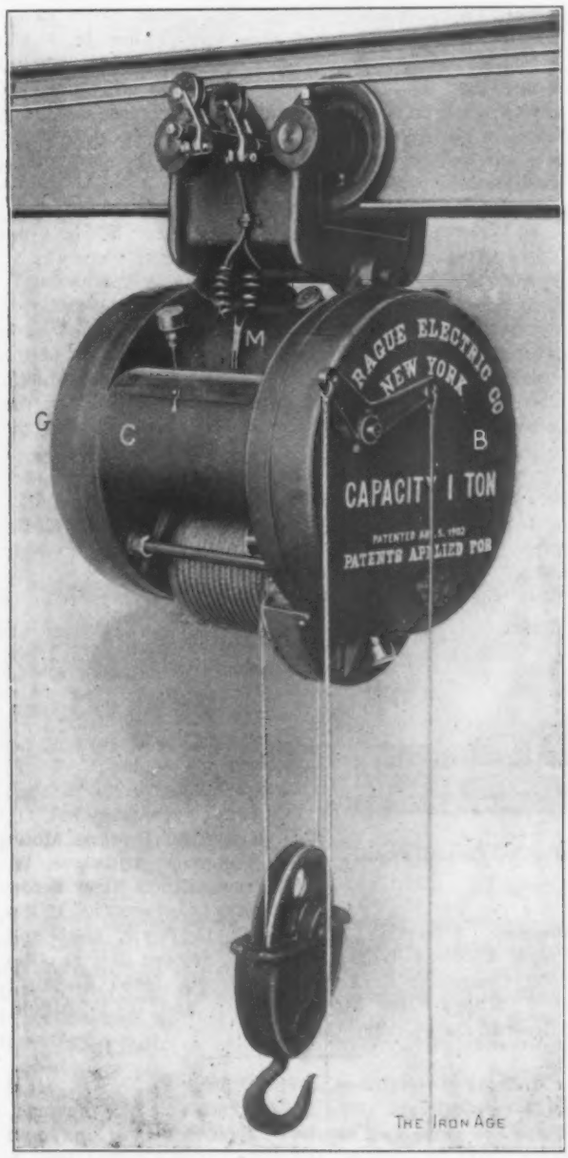
A 24-In. Double-Triple Quick Stroke Gould & Eberhardt Shaper with Contained Motor Drive.

A fact of particular interest is that the motor is not stopped and started each time that it becomes necessary to stop or start the tool. The motor may run continuously, and by means of the long curved lever shown at the right in the engraving, a clutch is thrown in or out, as occasion requires, thus giving perfect control of the cutting head. This could not be had otherwise unless the motor could be stopped and started instantaneously and that would be difficult to accomplish and rather severe on the motor.

In connection with the clutch a very desirable feature is the mechanical brake which enables the cutting head to be brought to rest almost instantly at any point in the stroke. The arrangement for governing the transverse feed of the table is ingenious and effective, as is also the means for supporting the table on the extended base when heavy work is being machined.

Sprague Alternating Current Electric Hoists.

Alternating current induction motors, while they have been successfully used on large electric cranes, have been more difficult to adapt to electric hoists. The obstacles are the larger size of an alternating current motor, as compared to a direct current motor of the same power, the relatively small amount of clearance between the rotor and stator of induction motors, the difficulty of obtaining speed variation without great complication and expense, and the several voltages, phases and frequencies of alternating current now in common use, which require either a different motor, a different winding or a different connection, compelling the manufacturer to carry a large stock of extra motors.



The S-1 Alternating Current Electric Hoist Built by the Sprague Electric Company, New York City.

For some time the Sprague Electric Company, New York City, has been endeavoring to devise an alternating current hoist that will be satisfactory in spite of the limitations of induction motors, and in the one illustrated herewith believes it has accomplished that end. This, which is the first size of the new line, is known as the S-1 hoist, and is equipped with an induction motor, for use on two or three phase circuits of 60 cycles frequency. It has a maximum capacity of ½ and 1 ton, at speeds respectively of 30 and 15 ft. per minute, and in general outward appearance is similar to the S-1 direct current hoist made by the same company. Although the motor is larger than the one used in the direct current hoist, the overall dimensions of the hoist entire are not increased. Ten of these hoists have been in actual use for six months, and are reported to be fully equal to direct current hoists, where speed variation is not required.

The motor indicated at M in the engraving is of the induction type, with squirrel cage winding, and has a comparatively large clearance between the rotor and stator to provide against unbalancing the rotor by slight wear of the bearings. All gears used are cut from solid blanks, the larger gears being cast iron and the pinions machine steel, and are lubricated with grease. A cast iron gear box, G, which forms one end of the hoist frame, has a closely fitting cover, which entirely incloses the gears, protecting them from dust and dirt.

Two brakes are provided on the hoist. One is an ordinary mechanical brake, operated by a cam attached to the controller shaft, and turning with it. This, known as a tongs brake, on account of its shape, is so arranged in respect to the controller mechanism that the brake shoes are held from the brake pulley only when current is flowing through the motor. At all other times the brake shoes are pressed against the brake pulley by a spring the force of which is adjustable. The S-1 hoist is also provided with a load brake of the disk type, mounted on the armature shaft, which works only when the hoist is lowering, a roller pawl permitting the friction disk to turn freely when the load is being lifted. A helical spring regulates the amount of friction in lowering, so that the hoist will safely sustain its rated load, even if the mechanical brake fails to work.

The limit switch used consists of a screw, on which is mounted a traveling nut and two stationary nuts, the latter being pinned to the screw in fixed positions. One end of the screw carries a small sprocket wheel chain connected to another on the end of the controller shaft. The stationary nuts are pinned at points on the screw corresponding to the desired high and low limits of the hoist's travel. At either limit the moving nut on the screw engages a stationary nut causing the sprocket wheel on the end of the screw to be rotated through part of a revolution, cutting off the current by turning the controller to the off position. At the same time the brake is applied and the hoist is immediately stopped. In lowering the operation is the same, but in the opposite direction. The cast iron case indicated at B in the illustration contains the mechanical brake, the limit switch mechanism and the load brake.

The controller is of the cylinder type, giving one hoisting and one lowering speed, and is mounted between the end frames and inclosed with a sheet metal cover, as indicated at C in the illustration.

The hoisting drum is of the full diameter specified by the manufacturers of the rope, and the sheave is of the same diameter of the drum. This is a practice which the company has always held to, in the belief that a rope is injured quite as much by bending around a sheave of small diameter as around a drum of that same diameter.

All lubrication is by means of compression grease cups, the company's experience having been that electric hoists are more satisfactorily lubricated with grease than with oil. The advantages are greater cleanliness, as there is no liability of dripping, either about the floor or into the windings to cause short circuiting of the electrical connections.

The trolley carriage is what is called the plain style A, and is adapted to run on the lower flange of an ordinary standard I-beam. The wheels have a spherical tread, and consequently touch only a single point. This is a matter of some importance, especially in going around curves, as it enables the tread of the wheels to travel across the flange without material wear caused by excessive slipping. The spherical tread wheel will roll across the flange on a curve, where a conical tread wheel will slide.

When desired the hoist is supplied with a hand geared type of carriage, having a hand chain and gear wheel meshing with gears cut directly in the flanges of the trolley wheels. When a hand chain is used to traverse the trolley, it is carried through guides on the side of the hoist frame. The wheels have roller bearings lubricated by grease.

The general construction features of this hoist are the same as the S-1 direct current hoist, which has been manufactured by the company for some years, so that its mechanical features have been well tried out. The change to adapt it to the use of alternating current involves simply the substitution of an alternating current motor, and the addition of one or two current collectors, depending on whether a two or three phase motor is furnished. Except for the fact that it is impractical to get speed variation without an increase in size and weight of the motor, which renders it too cumbersome for use on small hoists, the alternating current hoist will give as good service as one arranged with a direct current motor.

The Commonwealth Universal Pricking Attachment.

The universal pricking attachment shown in the illustration is manufactured by the Commonwealth Machine Company, 6 Walnut street, Worcester, Mass., and is intended for the duplicate marking of sheet metal to be bent into cornices, skylight bars, gutters, &c. It can be used on any square shear and performs its work more easily, quickly and accurately than is possible by hand. It consists of a bar carrying any desired number of tempered steel pricking points sliding in a groove. They can be set quickly at any distance not less than ⅜ in. apart, in perfect alignment, and are clamped rigidly in the bar by turning the binding screws. The bar is attached to the operating head of a square shear by drilling and tapping two holes in the head to receive set screws provided for the purpose. Perpendicular slots in the bar permit of adjustment to obtain the proper position of the attachment. The points strike in a continuous groove made by removing the lower blade from the shear and filing off the back corner, which is the only change necessary in the shear. This attachment permits the pricking of bending joints at the same time the stock is squared. By holding the stock away from the cutting edge and depressing the treadle a machine equipped with the attachment may be used for pricking only. The bar remains permanently on the shear and when not needed is raised out of the way and does not interfere with the ordinary use of the machine.

The Universal Pricking Attachment for Sheet Metal Workers, Made by the Commonwealth Machine Company, Worcester, Mass.

The Chicago Branch of the National Metal Trades Association.

The annual dinner and meeting of this organization was held on the evening of March 13 in the rooms of the Mid-Day Club, Chicago. An enthusiastic gathering of over 100 members and guests made the occasion memorable.

The reports of the officers for the past year indicated a steady and wholesome growth in the membership, and the manner in which the affairs of the association have been conducted and the labor issues have been met and overcome was heartily indorsed and approved. Of practical interest was the showing made by the association's free employment bureau for the third year, ending March 1, 1907, which was as follows:

Number of men registered at the employment bureau...	10,629
Number of men assigned to shop positions.....	8,659

J. H. Cone, assistant secretary of the National Metal Trades Association, was the guest of the evening, and delivered a thoroughly practical as well as eloquent address. F. W. Job, secretary of the Employers' Association, with which the Chicago branch is affiliated, interested his audience by discussing the enlarged scope of that most useful and necessary association.

The election of officers for the ensuing year resulted as follows: President, F. C. Caldwell; vice-president, W. L. Kroeschell; treasurer, John W. O'Leary; secretary, Paul Blatchford. Executive Committee: F. C. Caldwell, F. K. Copeland, E. E. Hanna, John W. O'Leary, W. L. Kroeschell, L. C. Walker, H. H. Lathem, John D. Hibbard and Fritz Goetz.

The Cleveland Branch of the National Metal Trades Association.

The annual meeting and banquet of this organization was held at the Colonial Hotel, Cleveland, Ohio, on the evening of March 14. About 50 members were in attendance. The reports of President Walter D. Sayle, Treasurer L. H. Kittredge and Secretary Philip Frankel showed that the branch, which has been in existence only a year, is in good shape financially and has enjoyed a large increase in membership. Among the new members enrolled during the year are some of the most prominent manufacturers in the city.

After the banquet a number of addresses were made, J. H. Webster, president of the Variety Iron Works Company, acting as toastmaster. The speakers were Jay P. Dawley, Henry W. Avery, M. J. O'Donnell, Howard P. Eells and J. H. Cone, assistant secretary of the National Metal Trades Association. Most of the remarks were devoted to the labor question. Mr. Eells spoke about the business conditions of the country and took an optimistic view of the future, but said that much depended on the attitude of the Government and the people toward the railroads. Mr. Cone devoted his remarks to the work of the National Association and urged the Cleveland members to attend the national convention in Boston.

During the meeting the members presented W. D. Sayle, the retiring president, with a solid silver center piece.

It was decided to extend the Cleveland branch so as to take in members from all of northeastern Ohio. This, it is expected, will result in a large increase in membership the coming year.

The election of officers for the ensuing year resulted as follows: President, W. B. Cowles, Long Arm System Company; vice-president, L. H. Kittredge, Peerless Motor Car Company; treasurer, W. C. Bruce, Union Steel Screw Company; secretary, Philip Frankel. Executive Board: W. D. Sayle, Cleveland Punch & Shear Works Company; George Bartol, Otis Steel Company; C. J. Snow, Macbeth Iron Company; D. J. Kilby, Kilby Mfg. Company, and E. E. Allyne, Allyne Brass Foundry Company.

Industrial conditions at Harrisburg, Pa., are reported to be very fair and there is assurance of a busy summer. There are more men employed than in a long time, and every plant is working full time. The Central Iron & Steel Company has been taking some large plate orders lately and is busy with shipments for bridge and ship plate. Similar conditions are reported at the Lochiel mills of the Harrisburg Rolling Mill Company, the Chesapeake Nail Works, Harrisburg Pipe & Pipe Bending Works, which reports much demand for steel and coils; Harrisburg Mfg. & Boiler Works, Jackson Mfg. Company, and the Lalance & Grosjean Mfg. Company. Six of the seven furnaces in the vicinity are in blast. The only idle furnace is at Steelton, where No. 3 is being extensively overhauled. It will be started before many weeks. The output of the furnaces is reported as good.

The Board of Managers of the Verein deutscher Eisenhuettenleute at Duesseldorf has appointed a committee to study the question of the power requirements of the process of rolling steel. There have thus far been named Pitz of the Deutscher Kaiser Works, Dr. Lueg of Gutehoffnungshuette and Pottgiesser of Hoesch.

A Bliss Special Automa ic Press.

On a power press intended for only one operation the feed may be comparatively simple since it has only to introduce the stock. The feed on a machine performing two or more operations becomes more complicated as it combines with this function the additional one of passing

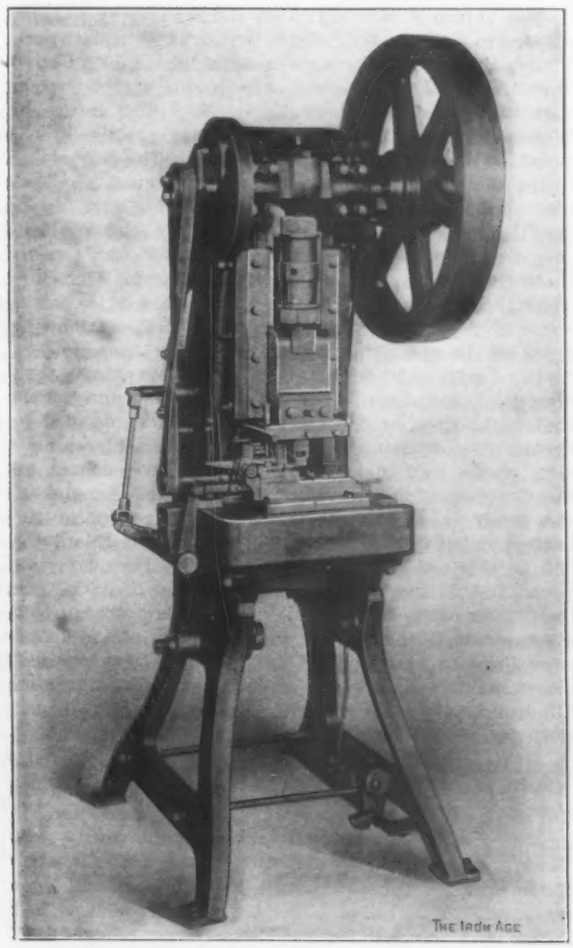


Fig. 1.—A Special Bliss Press Performing Three Operations at One Stroke.

the partly finished pieces to each successive set of punches and dies until they are finished. The number of different combinations of feeds for the two purposes mentioned is large and some of them are quite common, but the feeding mechanism on the machine illustrated in Fig. 1 contains some features which are particularly interesting.

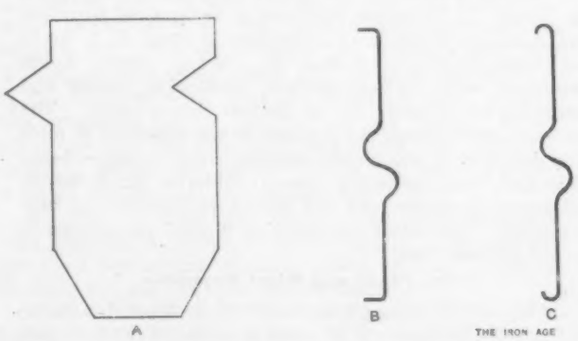


Fig. 2.—A Sample of the Work at the Three Stages in Its Completion.

The press was specially designed by the E. W. Bliss Company, Brooklyn, N. Y., for performing three operations simultaneously in the manufacture of pieces of the form shown in Fig. 2, although it may be readily adapted for other work.

The stock from which the piece is made is fed from a reel through the back of the press by a belt driven single roll feed, better seen at A in the detail Fig. 3. This feed advances the strip to a stop just forward of the blanking punch B, which cuts the blanks, forces them through the die and locates them on a push feed just under the die. The push feed C reciprocates across the bed of the press from right and left and is operated from the shaft by a cam in conjunction with a series of bell cranks, levers and connections. The carriers of the feed are arranged to first receive the cut blanks and push them under the second operation punch D where they are partly formed. After this operation two fingers carry the piece under the third punch E, where it is finished and then discharged at the next stroke of the press by fingers similar to those last mentioned.

The press runs continuously at 80 strokes per minute and as it operates three dies at each stroke performs 240 operations per minute, consequently its producing capacity is equivalent to more than that of three presses fed by hand and run intermittently, while the operating ex-

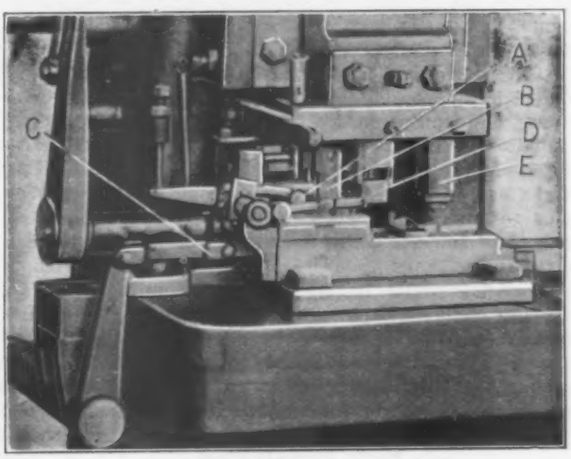


Fig. 3.—Detail of the Feeding Mechanism.

penses are reduced two-thirds and the cost of labor for intermediate handling is eliminated. The press weighs about 1500 lb.

Coke Oven Gas Engines.

Ehrhardt & Sehmer, Schleifmühle, near Saarbrücken, Germany, whose gas engine was described in *The Iron Age* of August 9, 1906, page 344, replied recently to a statement made in British engineering journals as to the difficulty of using coke oven gas for driving engines. They refer to engines made at their works that have been running since 1904 on coke oven gas, with no difficulty either from compression or preignition. The firm writes: "We have built, and are constructing, engines totaling over 12,000-brake horsepower for coke oven gas, averaging 500 B.t.u. per cubic foot, among which are four of 1200 hp. and two of 3000 hp. A misapprehension also appears to exist concerning the use of blast furnace gas. No more difficulty is experienced in igniting this than the richer coke oven gas, the 70 to 100 B.t.u. per cubic foot giving most reliable working."

London *Engineering*, commenting on the above, says: "We know, as a matter of fact, that difficulty has been experienced, both here and on the Continent, in working with coke oven gas; it is also a fact that blast furnace gas does not ignite so readily as richer gases, and is therefore much the easiest gas on which to run a large gas engine. If there is no difference between the two, why is a higher compression invariably used with this gas than with richer gases?"

The Western Valve Company, whose offices and warerooms are now located at 41-43 West Randolph street, Chicago, will remove to 179-181 East Lake street, where it expects to be established by May 1.

Japanese Government Steel Works.

The Results of Five Years' Operations.

A report on the Imperial Japanese Government Steel Works at Wakamatsu, received from the British Chargé d'Affaires at Tokio is published in the British Board of Trade *Journal* of February 28, 1907. It is evidently based on information obtained at first hand, and thus is of value in a way not usual where industrial subjects are treated by Government representatives. Liberal extracts from the report are given below:

Preliminary Investigations.

The Japanese Government first made an unsuccessful attempt to establish works at Kamaishi in Rikuchu Province, and then offered subsidies in the hope of attracting private enterprise, but with no result. Here the matter rested for some years, until in 1890 the Government outlined a scheme and submitted to the Diet estimates of the expenditure necessary for its accomplishment. The proposal of the Government was rejected by the Lower House, because, in the opinion of the House, the Government had failed to make it clear how much raw material could be obtained in the country. The Upper House, however, persuaded the Government to appoint a committee to investigate the matter thoroughly, suggesting at the same time that the establishment of the steel works and its subsequent control should be left in the hands of the Department of Agriculture and Commerce instead of intrusting the working of the scheme to the naval and military authorities. A committee comprising high officials of the interested departments of State assisted by technical experts, was thereupon named, and an exhaustive report was furnished on the questions submitted by the Government. This committee reported, but not satisfactorily, and a second committee took up the matter, succeeding in the experimental manufacture of steel.

Early Organization.

These preliminary investigations had occupied about five years, and at the beginning of 1896 a bill was introduced into the Diet for the disbursement of about $2,000,000, as expenses for the establishment of the works. The bill passed unanimously, and on March 30, 1896, an imperial edict was issued placing the enterprise under the control of the Department of Agriculture and Commerce. The staff was to consist of a president, chosen by the cabinet, with a salary of $2000 a year; one chief expert, with a salary of $1500 a year; two managers, with salaries of $1000 a year each; eight experts, with salaries averaging $600 a year, and 30 clerks and 40 assistants, at an average monthly wage of $15. In addition to this native staff, two German engineers were engaged, one of whom remains on the staff at the present time.

In order to examine the existing conditions of steel works in foreign countries and to obtain the best expert opinions regarding the new undertaking, three engineers were sent to Europe and the United States. Their report showed that the original estimates were far too small, and a supplementary budget was therefore presented in 1898 applying for $3,250,000 more. In February, 1899, a further sum of $4,300,000 was voted for the improvement of Wakamatsu Harbor to facilitate transportation by sea and to secure cheap and regular supplies of coal and ore for the use of the works. Thus the total appropriated for the establishment of the works amounted to over $9,500,000.

Advantages of Location.

The area of the works is about 330 acres, including some 82 acres of ground recently purchased for the purposes of enlargement and not yet built upon. The exact situation is Yawata-machi, Onga-gori, Chikuzen Province, in the northwestern district of the Island of Kyushu. It is quite close to Wakamatsu, the chief port for the export of Kyushu coal, and about 9 miles west of Moji, the well-known coaling port on the Shimonoseki Straits and northern terminus of the Kyushû Railway. The Straits separate the Island of Kyushu from Nippon, the main island. The position was chosen largely on account of its proximity to the Chikuho coal fields, by far the most extensive coal producing district at present known in Japan. It lies 30 miles to the south of Wakamatsu in the provinces of Chikuzen and Buzen, and covers an area of over 320 square miles.

Harbor Limitations.

The entrance to Wakamatsu Harbor is very narrow, opening to a basin about a mile across at its widest part. This basin again opens onto a large lagoon 10 miles in circumference. It is on the eastern side of this lagoon that the imperial steel works stand. The future of Wakamatsu had been for many years practically assured, owing to the Chikuho coal fields. The only obstacle in the day of development was the great shallowness of the harbor, which at that time was only 5½ ft. deep in its shallowest part. To remove this obstacle official sanction was obtained in May, 1890, for the organization of the Wakamatsu Harbor Works Company, which had for its objects the construction of a breakwater 2245 yd. long and the dredging of the shallowest parts within and without the harbor. By June, 1893, a depth of 8 ft. had been obtained, and in May, 1896, soon after the issue of the imperial edict officially announcing the organization of the steel works, it was decided to extend the dredging operations very considerably in view of the fact that Wakamatsu had been chosen by the Government for the site of the works. At present the depth at ebb tide is 20 ft. over one-third of the harbor, and it is expected that in a few years this depth will be obtained throughout the length of the quay wall (over 2000 ft. long), which was completed in 1905. The limitations of this quay wall do not allow dredging to a greater depth than 20 ft. On completion of the operations three or four ships of from 2000 to 3000 tons displacement will be able to load and unload cargo simultaneously alongside the wall. At present there is not room for more than one vessel of this displacement.

Railroad Connection with Coal Fields.

A branch line of the Kyushu Railway now connects Kokura and Kurozaki, passing through Yawata, where there is a station immediately adjoining the steel works. Yawata again is connected with the quay and all parts of the works, which now have a length of railroad lines amounting to 30 miles. This length will be increased in the near future. The road has narrow gauge—that used throughout Japan—consequently complete communication has been established between the main railroad system and all parts of the works. Although Yawata is the station nearest to the works, the most convenient station for passenger traffic is Okura on the main line. This station is only 28 min. from Moji by train, and 2 miles from the works, whereas the time taken to travel between Moji and Yawata stations is 1½ hr.

The chief advantage resulting from the construction of the branch line referred to above is that coal can now be carried directly to the works from their own mines at Futase, in Chikuzen Province, a distance of 30 miles. An extensive addition of machinery is about to be made at these mines, including an electric power house equipped with turbine, surface condensing plants and pumping machinery, all of British manufacture. The present output from these mines is not sufficient to meet the demands of the works, supplementary supplies being obtained from privately owned collieries at Miike in Chikuzen Province, and the Island of Takashima, near Nagasaki. The total consumption of coal per annum is about 500,000 tons.

Coke Plant and Blast Furnaces.

The coal washing plant at present in use has a capacity of 1200 tons per 24 hr., and 500 tons of washed coal is required to produce 300 tons of coke. For every ton of pig iron made 20 cwt. of coke is consumed. The coke appears to be rather poor, the best being produced by two batteries of Semet-Solvay and Coppée ovens. Beehive ovens are also in use. The cost of coke delivered at the blast furnaces is from $4.60 to $4.85 per ton. A by-product plant is being built to take ammonium sulphate and tar from the Semet-Solvay battery.

There are two blast furnaces in working order and

one in course of construction to be completed in 1907. The two furnaces now in use produce 300 tons of pig iron in 24 hr., one giving 175 tons and the other 125 tons.

At present the blowing engines are driven by steam generated in 24 Lancashire boilers by the gas from the furnaces, but a plant is in course of construction for purifying the gas from the furnace tops and using it in gas engines.

Ore Largely from China.

The ore used at the furnaces is hematite, with some magnetite and limonite. About 80 per cent. of this ore comes from the Dayeh mines, near Hankow, in China, under special contract with the Hang Yang Iron Works, owners of the mines. The Dayeh ore contains on an average 60 per cent. of iron, and at least 100,000 tons must be supplied annually. Up to September, 1906, the quantity of ore sent to Japan was 110,000 tons. The cost of this ore at the mines is from $1 to $1.75 per ton, and the freight to Wakamatsu is $1.75 per ton, so that the cost of the ore delivered at the furnaces is from $2.75 to $3.50 per ton.

The transport of the China ore is entirely in the hands of the Mitsu Bishi Kwaisha, the well-known Japanese firm. A contract was made with this company whereby all the Hankow ore would be carried by them, provided at least two ships of 3000 tons displacement were built especially for the purpose. Two vessels of 3400 tons displacement were accordingly built at Nagasaki in 1901, and these ply regularly between Hankow and Wakamatsu, discharging their cargoes alongside the quay wall. Altogether 15 ships of between 2000 and 3000 tons displacement loaded and unloaded at the quay wall from January to October, 1906. A large proportion of the ore for the works is transferred into lighters at Moji from ships which are too big to enter Wakamatsu Harbor. The inconvenience and extra expense caused by this transfer are inevitable, owing to the scarcity of vessels of draft and displacement suitable to Wakamatsu Harbor.

An irregular supply of hematite ore is obtained from Choren and Kutzuzan, in Corea, and a contract has recently been concluded for an annual supply of 10,000 tons of limonite ore from Abuta, in the Province of Iburi, in the Hokkaido (or Yezo, the northern island of Japan). About 12,000 tons of limonite are obtained annually from Yanahara, in Mimasaka Province, and small quantities from the provinces of Tosa and Buzen.

Opening Iron Mines in Japan.

It is fully realized that the primary object of the Imperial Steel Works cannot be attained while Japan is dependent on foreign countries for the great part of her supply of raw material. Two mines have been purchased at Akadani and Kamo, in Echigo Province, and work was commenced in the former some six or seven years ago, but a committee of inquiry reported that the cost of freight to Wakamatsu would render the undertaking a financial loss. It was calculated that the Dayeh ore could be delivered at the furnaces cheaper than the Akadani ore. The ore in these two mines is very rich in iron, so that every effort will be made on the part of the authorities to facilitate transport from Echigo, and gradually replace partially, if not totally, Dayeh ore by ore obtained from their own mines. The estimated output of the Akadani mines, when in full working order, is about 100,000 tons of ore annually.

All the limestone used in the blast furnaces comes from Tsunemi, in Buzen Province, Kyushu. The amount consumed per annum is about 35,000 tons, at a cost of 60 cents per ton delivered at the furnaces.

A conduit leads water from the Itabitsu River, about 2½ miles away, and distributes it all over the works. The average amount of water supplied per minute is 1200 gal. A conduit is now being laid from the Onga River, 10 miles distant. On completion of this conduit the total water supply per minute will be about 6000 gal. For purposes of storage two reservoirs have been built and a third is under construction. Of the two already completed, one of a capacity of 120,000 c. m., is near Okura station; the other is at Otani, quite close to the works, and has a capacity of 200,000 c. m. The unfinished reservoir is also at Otani, and will have a storage capacity of 200,000 c. m.

Steel Plant and Accessories.

In addition to the pig iron department, the steel department and the rolling mill department are the following: Electric power house, central pumping station, iron foundry, repair shop, pattern shop and foundry sand storage, boiler shop, smithy, chemical and mechanical laboratory and inspection bureau, and fire brick plant. The buildings are lighted throughout by electric light.

There are at present two Bessemer converters, with a capacity of 150 tons each in 24 hr., one charge amounting to 10 tons. In three years' time a third plant will be completed, according to designs drawn up by the German expert in charge of the Bessemer department. The fire brick and tuyeres used in the Bessemer converters are now all made at the works. The result is not entirely satisfactory, largely owing to the poor quality of Japanese clay. Good clay is very scarce and consequently dear. It is doubtful, however, if foreign bricks are sufficiently superior to the home-made ones to justify the increase in cost which their import would occasion. The foregoing remarks apply to all crucibles used at the works.

There are now eight Siemens-Martin furnaces, putting out about the same quantity of molten steel per 24 hr. as the two Bessemer converters—*i. e.*, 300 tons. A great part of this steel is taken in 5-ton ingots direct to the plate mill.

Distribution of Product.

Under present conditions the works are able to turn out about 90,000 tons of finished material a year. The original plans were for an annual output of 60,000 tons, which would have satisfied one-half of the demands of that time, but the success of the venture and the steady increase of Government requirements have brought about an extension of the original programme. In the next five or six years it is confidently expected that 180,000 tons a year will be produced, or double the present output.

By far the greatest portion of the product goes to the Imperial Navy Department, the remainder being purchased by the War and Railway departments. Materials used at the various arsenals in Japan—Tokyo, Kure, Sasebo, Osaka, Yokosuka and Maizuru—are largely supplied by the Imperial Steel Works. Practically all the materials for the building of ships of war are now turned out at the works. However, armor plate is not made there.

For the Railway Department 40,000 tons of rails is turned out yearly. These rails vary in weight from 9 to 60 lb. a yard, the output of heavy rails being 10 times that of light rails. Heavy rails are exported in large quantities to Corea for use on the Corean and connecting systems. The selling price of heavy rails is about $36.50 per ton. With regard to the prices paid by these three Government departments for goods purchased from the Imperial Steel Works, it appears that special contracts are made and renewed annually. The contract price is not dependent on the current foreign market prices, but is arranged in advance on the basis of the average prices ruling abroad during the immediately preceding five years, due consideration being also given to existing conditions at the works.

Range of Rolled Products and Tonnages.

A definite idea of the materials supplied by the Imperial Steel Works is given in the following description of the rolled products in the period May to August, 1906:

Plates and sheets from 1-16 to 1½ in. in thickness and 4 to 7 ft. wide.

Rounds ⅜ to 3 in. in diameter, squares ⅜ to 5 in. square, and flats ½ to 4 in. wide and ⅛ to ½ in. thick.

Beams 3 x 3 in. to 7 x 18 in., weighing 8.5 to 75 lb. per foot, with web from 0.2 to 0.55 in. thick, and flange 0.332 to 0.928 in. thick.

Z bars from 3 x 2½ x 3 in. to 10 x 3½ x 3½ in., 9.81 to 28.16 lb. per foot, with web 0.3 to 0.475 in. thick, and flange 0.4 to 0.575 in. thick.

Channels 4 x 2 x 2 in. to 15 x 4 x 4 in., 0.25 to 0.525 in. thickness of web, and 0.375 in. to 0.63 in. thickness of flange.

Angles of unequal legs 2 x 2½ in. to 3½ x 7 in. Angles of equal legs 1 x 1 in. to 6 x 6 in. Bulb angles 2 x 5 in. to 3½ x 9 in., thickness 0.325 in. to 0.475 in.

Bulb tees 5 x 7 in. to 6½ x 12 in. Bulb plates 9 to 12 in. wide and 0.45 to 0.60 in. thick.

Tees 1¼ x 1¼ in. to 4 x 6 in., with 0.187 to 0.50 in. thickness of web and flange.

Rails 9 to 60 lb. per yard in 15 to 30 ft. lengths.

The rolled products manufactured by the Imperial Steel Works, from May to August, 1906, and their tonnage, are given below:

	Tons.
Plates and sheets	7,316
Round, square and flat bars	3,382
Angles, channels, tees and other shops	2,311
Blooms	55
Heavy rails	11,110
Light rails	1,179
Total	25,353

The following copy of the tensile tests taken on October 10, 1906, indicates the quality of steel turned out at the works:

Marked.	Size, in inches.	Elongation per cent. in 8 in.	Ultimate strength per sq. in. in tons.	Per cent. of reduction.
M. 9095 plate	⅝ in. thick	22.26	26.55	57.58
M. 9095 plate	⅝ in. thick	20.70	26.59	47.65
M. 9163 plate	⅝ in. thick	26.17	26.72	60.41
M. 9163 plate	⅝ in. thick	26.95	26.57	60.93
M. 9219 plate	9-16 in. thick	24.60	27.78	60.06
M. 9219 plate	9-16 in. thick	25.39	28.09	52.04

Mills and Equipment.

A large proportion of the machinery supplied is of German make. At the outset all machinery was procured from Germany with the exception of some electric cranes of American make, but now England and the United States are fairly well represented. The pig iron and steel plant is practically all from Germany.

In the rolling mill department the English plant is as follows:

Tire Mill.—Finished and in working order.

Sheet Mill.—Finished and will start working shortly.

Galvanized Plate Mill.—Not yet finished.

An American firm supplied the following plant:

Plate Mill.—In working order.

Wire Rod Mill.—Not yet finished.

Wire Drawing Plant.—Finished, but not yet in working order.

Except in one or two instances the authorities have adopted the wise policy of purchasing the best machinery which can be obtained in Europe and the United States. But some plant in the rolling mill department bears evidence of having been bought in the cheapest market; the design is quite out of date and the finish far from perfect. It must be understood that this is the rare exception, and that nearly all the machinery in use at the works is of the most modern type. The shops are in all cases buildings of iron construction with corrugated sheet iron or gypsum roofs, put up by a British firm.

The works are well equipped with traveling yard cranes driven by steam. On the quay wall are five cranes, one of 25 tons capacity, two of 2 tons capacity, and two of 1½ tons capacity.

The steam is supplied to the various engines in the rolling mill from a battery of 27 boilers of the Lancashire type, with riveted steel chimneys. There are altogether 127 boilers of this type, supplied by a British firm.

The locomotives used in the works are all from Germany, purchased through a Japanese firm, by whose agency a great portion of the machinery has been obtained.

Cheap Labor.

The number of skilled and unskilled workmen employed at the works is about 7000 with 3000 coolies, bringing the total number of employees up to 10,000. The daily wage paid varies from 9 to 95 cents.

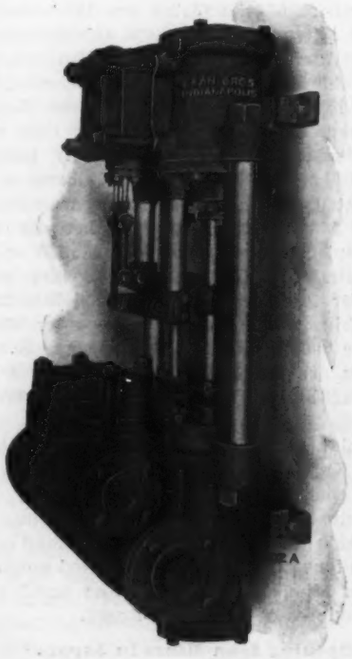
In addition to the buildings already mentioned there are two hospitals—a general hospital, with 30 beds, within the precincts, and an infectious hospital, with 10 beds—about half a mile from the works. At present there are 300 wooden houses for workmen, and 1500 are being built. According to a three years' programme the total number of dwelling houses is to be 3000.

The Atlantic Iron & Steel Company, New Castle, Pa., now a part of the Republic Iron & Steel Company, has applied to the courts for a decree of dissolution.

The Dean Bros. Wall Pump.

A pump particularly adapted for installing in locations where space is limited has been brought out by the Dean Bros. Steam Pump Works, Indianapolis, Ind. This is a duplex pump and as shown in the illustration is designed for bolting to a wall in vertical position where it occupies but little room and may be put in any out of way place. The pump is of heavy construction and is designed for a working pressure of 150 lb. to the square inch.

The pump cylinder is made with a valve plate and cover, the best form for allowing quick and complete access to the valves. Vertical pumps have been made with hand hole plates, and with the valves set into the cylinder where they were very difficult to get at. The present construction aims to avoid this annoyance. The frame is of heavy finished steel rods, making a rigid and very strong connection, and leaving the stuffing boxes and other parts of the pumps so that they are easily reached



A Vertical Duplex Wall Pump Built by the Dean Bros. Steam Pump Works, Indianapolis, Ind.

by the engineer. The valve gear is made without rock shafts and is supported on finished steel rods. The valve levers for moving the valves are both alike and are interchangeable.

Six of these pumps have been furnished to the United States Government for use on the Panama Canal.

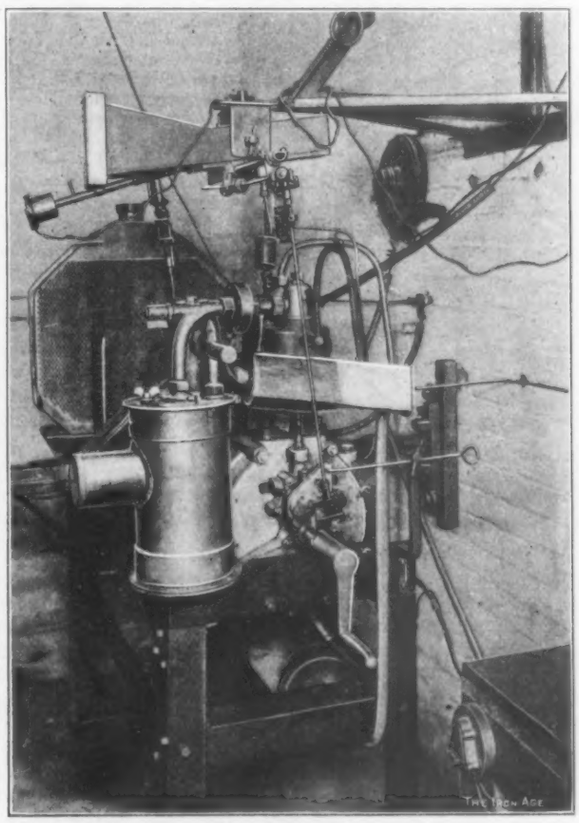
The Harrisburg, Pa., Foundry & Machine Works has just booked orders for engines on important United States Government contracts, its special type being selected over all others submitted. One order was received from the authorities in charge of the dredging of the Mississippi River and calls for special twin compound engines of 1000 hp. each. They will be placed on dredges to be used this year. Another order was from the Isthmian Canal Commission for one 400-hp. engine for a light plant along the canal. Other orders taken for Harrisburg engines include several for the Creston Colorado Mining Company for a plant at Torres, Mexico, and the second order for a 500-hp. engine for the Pasadena, Cal., light plant. In February the works booked over 40 engines.

The rolling mill at the plant of the Penn Shovel Company, Warren, Ohio, is nearing completion and about April 1 the company will begin to roll its own sheet steel for the manufacture of shovels.

Alkœthine, a Fuel for Gas Engines.

BY HOWARD GREENE.

Since the passage of the measure removing the internal revenue tax on denatured alcohol, little has been done toward bringing this fuel into the market as a competitor of gasoline. This is somewhat surprising to many who erroneously believed that the price was all that hindered alcohol from taking the place of gasoline; but to motor manufacturers and others acquainted with the limitations of alcohol it is entirely logical. Alcohol, vaporized and mixed with air in proper proportion to form a completely burning gas, burns slowly as compared with gasoline vapor. The combustion is so slow that it will continue throughout the power stroke of a moderate speed motor, and even after the exhaust valve has opened the gas may emerge burning. This means a waste of heat, and heat is energy. According to a well-known



An Automobile Engine Equipped for Testing Alcohol Vapor Combined with Acetylene as a Fuel.

authority, Dugald Clerk, the thermal efficiency of a fuel that burns throughout the stroke is diminished one-half.

All automobile motors are relatively fast-running machines, and though they may be made to run on alcohol and develop a fair degree of power at low speeds, at high speeds a great deal of fuel is wasted and the power generated is small compared to the consumption. To use alcohol advantageously the engine speed must be low and the compression high. Stationary alcohol motors, running at 300 rev. per min. or less and highly compressing the charge, have given excellent results, but these are not the conditions in automobile motors as now built. A slow-running, heavy motor is impracticable for automobile work, and in any case extensive alterations would entail more trouble and expense than the advantages gained by using alcohol would warrant. But though motor changes are practically out of the question, modifications of the fuel are not, and a new method of using alcohol, developed from the idea of altering the characteristics of alcohol without impairing its fuel value, has been devised and patented December 25, 1906, by F. W. Barker and Thomas L. White, of New York.

Briefly, the Barker-White system consists in vaporizing alcohol in a carbureter of the ordinary gasoline type and passing the vapor mixed with the proper volume of air, through calcium carbide. Commercial alcohol always contains water, usually about 10 per cent., which is absorbed by the carbide liberating acetylene gas, and the gas mixes with the alcohol vapor and air and is carried into the cylinder. Acetylene gas and air form a highly explosive mixture which, as experiments have shown, is too quick and powerful in its action for internal combustion motors, and will stand very little compression before igniting spontaneously. These qualities are just the opposite of those of alcohol vapor. The admixture of a certain proportion of acetylene gas, therefore, tends to counteract the sluggish combustion of the alcohol and to make it more easily ignited. By adding sufficient acetylene, alcohol vapor can be made to burn as rapidly as gasoline vapor or even more rapidly up to the limits of safety and desirability. With a high percentage of acetylene the explosions become sharp and quick, like dynamite, and produce a ringing sound that is characteristic of acetylene ignited in a gas engine. The quantity of acetylene in the mixture is regulated by varying the percentage of water in the alcohol. Tests have shown that 18 per cent. of water, by volume, is sufficient to generate the proportion of acetylene gas required to give a mixture about equal in its effect to gasoline vapor, as indicated by diagrams taken with a manograph.

Another advantage in this system is that the water in the alcohol is removed, which, if carried over with the vapor, tends to pit and corrode the valves and cylinder walls. Tests of the new fuel have shown that this trouble is eliminated. The tests were made in New York by Joseph Tracy, who in everyday life is a consulting engineer, but is better known as a driver of racing machines. A single-cylinder water-cooled De Dion engine was used, and its output absorbed by a dynamo feeding incandescent lamps. The engraving herewith shows the apparatus. The alcohol is first sprayed in an ordinary gasoline carbureter and mixed with air in the usual way. This mixture passes to the carbide chamber, a brass cylinder, of four or five times the capacity of the engine cylinder, having a wire netting for the support of a layer of ordinary lamp carbide. The sprayed alcohol and air are thrown downward on the carbide, and pass through to the supply pipe, the end of which opens from the carbide chamber under the netting.

The gas formed is called by the inventors "alkœthine," and is believed to have some interesting characteristics that have not yet been worked out. The motor can be started cold on alkœthine, there being no need to first warm up the engine by running on gasoline, as with pure alcohol. Owing to the volume of air present in the carbide chamber the motor would ordinarily have to be turned by hand a number of times before the gas would fill the space; so that the expedient was adopted of throwing a little alcohol and water on the carbide. The gas thus generated being at once taken into the cylinder, makes starting possible with a single turn of the crank.

Exact quantitative tests have not been made, so that it is not possible to state definitely the comparative cost of running a motor on alkœthine; but it is estimated that if alcohol were procurable at the price of gasoline—say 25 cents a gallon—a motor would run on alkœthine at the same cost as on gasoline. Carbide costs something less than 4 cents a pound in 100-lb. lots, but it increases the fuel value of the gas more than enough to offset its expense.

The Buffalo Copper Rolling Company has been incorporated at Buffalo, N. Y., with a capital of $800,000 and will build a large copper rolling mill, a site for which has been secured in the vicinity of the Buffalo smelting works of the Calumet & Hecla Company, in the northern part of the city. Work will be started early this spring on the plant, which will be equipped with the latest and most improved machinery for the rolling of sheet copper and brass and tubes and the drawing of copper and brass wire. Among the incorporators and stockholders are Geo. A. Ray, president of the Geo. A. Ray Mfg. Company, manufacturer of copper, brass and nickel plated goods; Robert L. Fryer, Franklin D. Locke, and Maurice B. Patch, superintendent of the Buffalo Smelting Works.

The Imperial Air Motor Hoists.

In foundries, structural material yards and all shops where compressed air is used short lifts are frequently necessary that do not warrant the use of a crane, and can be much more expeditiously accomplished with small power hoists, where they are available. Direct acting air hoists have been used in such locations quite generally, but they are claimed to lack certain advantages that are found in the Imperial air motor hoists, recently brought out by the Ingersoll-Rand Company, New York City, one of which is shown in Fig. 1 and a section of it in Fig. 2. In its entirety the hoist is new, but the air motor, which provides the power, is simply another application of the air engine used in the line of Imperial drills made by the same company.

Among the special advantages of the hoist are that it does not require a great amount of head room, and occupies no greater hight for a high lift than for a lower one. In the transmission of power to the hoisting drum a worm and worm wheel are used, which makes the hoist self-locking without the use of a brake, and gives more perfect control of the hoisting and lowering movements. There is no waste of air in filling long cylinders, the amount used at any time being only that required for the actual work. The motor is wholly inclosed, making it dustproof and facilitating in the providing of good lubricating means. A characteristic of the hoist which is emphasized as making it particularly suitable for the handling of flasks in foundries is the absence of vibration when running, avoiding the liability of jarring the sand loose.

The air motor is a balanced three-cylinder engine, particularly designed for economy in air consumption. It is valveless, in the sense that no separate part is required to control the air distribution. Air enters and is discharged through ports in the crank, which is of large diameter and so designed that the passages are short. The three radial cylinders are bored from a single

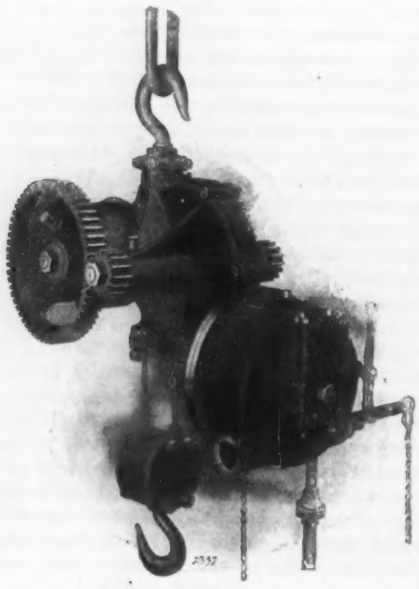


Fig. 1.—The Imperial Air Motor Hoist No. 4, Built by the Ingersoll-Rand Company, New York.

steel casting and rotate about the crank, the bearing being bushed with a taper bronze sleeve, so that wear may be readily taken up. The thrust of the piston is always outward and pressure is always exerted between the pistons and the cylinder head, hence the cylinders are constantly held to a tight seat on the crank, avoiding leakage of live air. The exceptionally short ports and passages and absence of leakage are the two influencing factors in reducing the air consumption of these motors.

The parts of the motors are all of steel, except the pistons and bushings, which are phosphor bronze, and the casing, which is of cast iron. All the bearings are lined with removable bushings, there being in no case a steel on steel contact. The frames run on ball bearings of large diameter, with removable ball runs, and are arranged to be continually flooded with oil, the oil being thrown over every part of the machine while it is running. Through a glass covered opening in the case the oil level is discernible at all times. Since the casing is not under air pressure there is no tendency to force the oil out, and the exhaust air does not escape until it has passed out of the casing, so that it has no tendency to carry away the lubricant. The worm gearing also is inclosed in a dustproof and oil tight casing, and all of

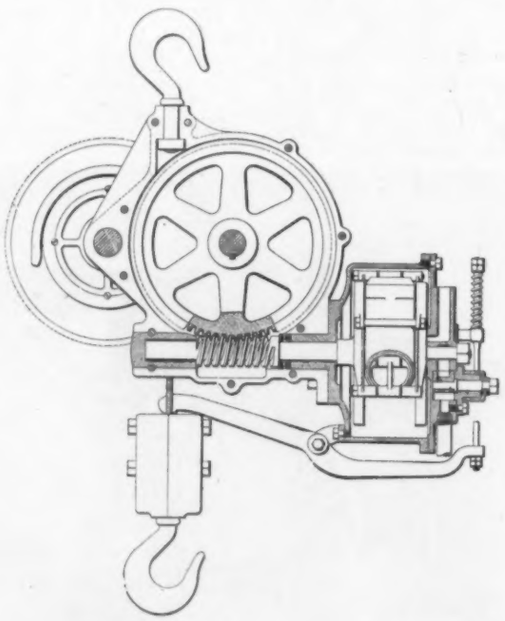


Fig. 2.—Sectional View of the Imperial Air Motor Hoist.

its bearings are bushed with removable phosphor bronze bushings.

The hoist is made in five sizes, having lifting capacities of 1000, 2000, 4000, 7000 and 10,000 lb. respectively. In the two smaller sizes there is but one speed reduction between the motor and the drum shaft, which consists of a worm and worm gear. In the larger sizes two speed reductions are used; the first by worm and wheel, and the second by cut gear and pinion. The worm is steel, and the worm wheel bronze, and all gears are cut. It is claimed that the transmission has repeatedly shown an efficiency of over 80 per cent. The thrust of the worm is small and is taken by a roller bearing. The drums are machine grooved to impose as little wear as possible on the pliable wire rope.

As may be seen in Fig. 1, the operating valve is self-centering, so that it automatically returns to the closed position when released. Pendant chains are provided so that the valve may be controlled from the floor. The speed of hoisting is readily and instantly controlled and is variable within wide limits. The maximum lifting speed of the smallest hoist is 32 ft. per minute, and of the other four, 16, 8, 8 and 7 respectively, with an air pressure of 80 lb. The maximum lift of the three smaller hoists is 17 ft., and of the two larger ones 12½ ft. The first three use 30 cu. ft. of free air per minute, and the last two 45. The net weight of the several hoists are respectively 250, 250, 300, 660 and 660 lb.

A particularly commendable feature of these hoists is the ball bearing lower hook block. The rope runs over a groove permitting compensation in the two drums, and the hook turns on ball bearings so that the load may be turned in any direction without twisting the rope. It will, therefore, stay in any position without swinging back, which is important in all delicate handling operations. An automatic stop is provided which closes the throttle when the load has been lifted to the limit of safety, which prevents injury to the hoist through careless handling.

Recent Customs Decisions.

Magnesite Brick.

Another step in the litigation over the customs classification of plain magnesite brick has been taken by the United States Circuit Court for the Eastern District of Pennsylvania, which decides that the article in controversy is not fire brick, and therefore not entitled to an assessment of $1.25 per ton. The court affirms the action of the Collector of Customs in levying duty at the rate of 25 per cent., under paragraph 3 of the tariff act, providing for "brick, other than fire brick, not glazed, enameled, or decorated," this action having the effect of reversing the Board of General Appraisers, which had granted the protest of O. G. Hempstead & Co., for duty at the rates specified for fire brick. The decision is, in part, as follows:

As the decision of the case evidently turns upon a question of fact, the Government's witnesses have satisfied me beyond doubt that "fire brick" is a phrase with a well-known commercial designation in the trade; that it means brick made from fire clay, and that magnesite brick are not commercially understood as being included within its scope. On the contrary, when magnesite brick are wanted they are always ordered by name and never as "fire brick." The testimony establishes these facts clearly, and the result is that the commercial meaning of the word, according to well established rules, must prevail.

Steel Railroad Ties.

The Board of United States General Appraisers decided March 16 that steel ties for railroad use cannot be admitted at the low rates of duty in the tariff provided for "steel ingots." The importer in the case, Joseph Blank, New York, was dissatisfied with the action of the Custom House authorities in classifying the merchandise under the structural steel shapes provision of the tariff act, this return carrying duty at the rate of 5-10 cent per pound. Under the contention raised by the importer, the duty would be 4-10 cent per pound. General Appraiser Fischer, who writes the decision, says that while the ties may have once been ingots they are now several steps removed from that condition. He therefore overrules the protest and affirms the higher classification.

Statuary.

The United States Circuit Court of Appeals is about to be asked to determine the right of the American customs authorities to restrict the word "statuary" as used in the commercial or reciprocity treaties, between the United States and Germany and Italy, to the limitations imposed by paragraph 454 of the tariff act. Both the Circuit Court and the Board of General Appraisers have affirmed the Government in imposing limitations. C. B. Richard & Co., New York, are the importers of the statuary, which in this instance is made of bronze. The differences between the importers and the Government result from an attempt on the part of the latter to apply the provisions of paragraph 454 to the word "statuary" as found in section 3 of the tariff act. This section authorizes the President to enter into commercial agreements with other nations whenever they make concessions in favor of the products of this country. Paragraph 454, which has caused the friction, reads in part as follows: "The term 'statuary,' as used in this act, shall be understood to include only such statuary as is cut, carved, or otherwise wrought by hand from a solid block or mass of marble, stone or alabaster, or from metal." As a matter of fact, however, substantially all bronze statuary is cast and not wrought by hand from a solid block of metal. In speaking of the matter, W. Wickham Smith, counsel for the importers, said that to restrict the term "statuary" so far as bronze statuary is concerned, by such a definition, is practically to leave it without anything to apply to.

When the statuary reached this country the customs officials exacted duty under paragraph 454 at 20 per cent., whereas the importers claimed 15 per cent., the rate specified for this statuary in the commercial agreement between the United States and Italy, adopted July 18, 1900. In importing circles the Government's construction of the word as used in the reciprocal treaties is considered unfortunate, particularly in view of the existing tariff difficulties between this country and Germany, which, so far as statuary is concerned, has a treaty with this country identical with the one negotiated with Italy. The case may come up for argument in the appellate tribunal in May or June.

Molders' Patterns to Remain Duty Free.

WASHINGTON, D. C., March 19, 1907.—The Treasury Department has decided not to make a new case to test the question of dutiability of molders' patterns, recently determined by the United States Supreme Court adversely to the Government in the case of the United States vs. R. Hoe & Co., and has instructed the collector at New York to forward a certified statement to be made the basis of a refund of the duties erroneously exacted in the liquidation of the entries involved in this suit and others of a similar character.

It will be remembered that the importations in question consisted of molders' patterns for castings to be used in the manufacture of printing presses. They were returned by the appraiser as "wood patterns for machinery not fitted for use otherwise," and dutiable as manufactures of wood at 35 per cent. under the provisions of paragraph 208 of the tariff act. The importers claimed free entry under the provisions of paragraph 616 of the free list, which embraces "models of inventions and of other improvements in the arts, including patterns of machinery, but no article shall be deemed a model or pattern which can be fitted for use otherwise." The Board of General Appraisers held the importation to be dutiable as assessed, but this decision was reversed by the United States Circuit Court, the opinion of which was affirmed by the Circuit Court of Appeals, it being held that the provision in paragraph 616 for patterns for machinery made of wood is not confined to the class of patterns used only as models and not capable of use otherwise, but includes also the class known as molders' patterns "used as models about which to form sand molds in which castings for machinery are made and which are fitted for successful use in that way." The Government, still further contesting the contention of the importers' claim for free entry, made application to the United States Supreme Court for a writ of certiorari, which was denied on December 17, 1906.

The question has since been under consideration as to whether, because of the importance of the issue, the Government would be justified in bringing another test case, especially in view of the reports that quantities of duplicate patterns of various kinds of machinery are now being imported free of duty under the decision in the Hoe case. Careful examination of the record, however, has convinced the authorities that it would be futile to carry the litigation further and the matter will therefore be dropped and the duties exacted promptly refunded.

W. L. C.

The Foundry Supply Association.—The secretary, H. M. Lane, 1137 Schofield Building, Cleveland, has issued a circular giving details of the arrangements made for exhibits by members of the Foundry Supply Association in connection with the convention of the American Foundrymen's Association at Philadelphia May 20 to 24. Alternating current and direct current will be povided for equipment operated electrically, and a compresser will be installed to furnish air at 80-lb. pressure for the operation of molding machines and other pneumatic devices. A tent 84 x 150 ft. will be pitched in the lot adjoining the Second Regiment Armory, in which the exhibit will be held, and thus an earth floor will be available so that pits can be dug, foundations constructed or other work undertaken in a manner similar to regular foundry procedure. Thus far the Foundry Supply Association has 68 members, but applications for space have been made by a number of others who will join the Association.

A typographical error was made in reprinting in the last issue of *The Iron Age* the paper on "The Metric System" by George Schuhmann of Reading, Pa. On page 831, in the sixth line, below the heading of "Advantages to Draftsmen" the figures printed 2′ 22″ should read 2′ 2″.

The United States Steel Corporation's Annual Report

Largest Gross and Net Earnings in Its History.

The fifth annual report of the United States Steel Corporation, covering the operations of the fiscal year ended December 31, 1906, shows gross earnings of $696,756,926.01, being the greatest thus far realized since the organization of the corporation. The net earnings were $156,624,273.18, also establishing a new record in this respect. As compared with 1905, the best previous year, for gross income, the gross earnings show an increase of $111,425,189.81, and the net earnings an increase of $36,836,614.75. The best previous year for net earnings was 1902, when the figures attained were $133,308,763.72. That year was surpassed in 1906 by $23,315,509.46. The appearance of this report also enables the following comparisons to be made:

Income Account.

	1906.	1905.	1904.
Net earnings after deducting all repairs, fixed charges, &c....	$156,624,273.18	$119,787,658.43	$73,176,521.73
Less appropriations for the following purposes:			
Sinking funds on bonds of subsidiary companies.	1,904,063.50	1,689,999.46	1,583,116.76
Depreciation and extinguishment funds	5,857,410.91	5,844,981.17	3,907,166.55
Extraordinary replacement funds.	15,395,860.64	13,587,909.87	8,667,044.36
Special depreciation and replacement funds....	7,500,000.00	2,232,172.00	.....
Balance of net earnings in the year	$125,966,938.13	$96,432,595.93	$59,019,194.06
Deduct interest on U. S. Steel Corporation bonds outstanding	22,839,849.98	23,056,437.25	23,097,732.83
Sinking funds on U. S. Steel Corporation bonds—viz.:			
Installments	4,050,000.00	4,050,000.00	4,050,000.00
Interest on bonds in sinking funds	858,000.02	641,412.75	420,559.92
Totals remaining	$98,219,088.13	$68,684,745.93	$31,450,901.31
Less charged off for various accounts and adjustments	90,501.19	99,253.78	1,183,372.12
Balance	$98,128,586.94	$68,585,492.15	$30,267,529.19
Less dividends on preferred stock, 7 per cent.....	25,219,677.00	25,219,677.00	25,219,677.00
Dividend on common stock, 2 per cent.	10,166,050.00	.....	.....
Surplus net income for the year	$62,742,859.94	$43,365,815.15	$5,047,852.19
Appropriated from surplus net income for the following purposes:			
Account expenditures on authorized appropriations for additional property and construction, and for discharge of capital obligations	28,500,000.00	16,300,000.00	.....
Set aside for construction of the plant at Gary, Ind.	21,500,000.00	10,000,000.00	.....
Balance of surplus for the year	$12,742,859.94	$17,065,815.15	$5,047,852.19

Statement of Surplus.

The undivided surplus of the corporation and its subsidiary companies since April 1, 1901, is given as follows:

Surplus or working capital provided in organization		$25,000,000.00
Balance of surplus accumulated by all companies from April 1, 1901, to December 31, 1905, exclusive of subsidiary companies' intercompany profits in inventories...	$44,313,794.07	
Undivided surplus of all companies for the year 1905.....	12,742,859.94	
Total.....	$57,056,654.01	
Less reserve to cover possible failure to realize advanced mining royalties	2,500,000.00	54,556,654.01
Total undivided surplus, December 31, 1906..		$79,556,654.01
Undivided surplus of subsidiary companies representing profits accrued on sales of materials to other subsidiary companies, and on hand in the latter's inventories—viz.:		
Balance on December 31, 1906....	$15,424,656.00	
Increase during the year 1906....	2,739,403.74	
Balance December 31, 1906.....		18,164,060.34
Total undivided surplus, December 31, 1906..		$97,720,714.35

This surplus has only been exceeded once—on September 30, 1903, when it was $99,809,836.33. On December 31, 1905, it was $84,738,450.67.

General Balance Sheet.

The condensed general balance sheet as of December 31, 1906, is as follows:

Assets.

Property account (properties owned and operated by the several companies):			
Balance of this account as of December 31, 1905.....		$1,380,031,032.25	
Adjustments during 1906 in foregoing balance.....		84,823.16	
Expended for additional property and construction in 1906		32,155,146.46	
Total.....		$1,412,271,001.87	
Less charged off to the following acounts:			
Bond sinking funds $1,406,500.00			
Depreciation and extinguishment funds 2,063,052.54			
Funds provided from surplus net income for payment of capital expenditures 30,615,844.26		34,085,396.80	
		$1,378,185,605.07	
Expenditures for stripping and development at mines:			
Balance at December 31, '05.$4,016,985.45			
Net increase during the year 1906 ..... 1,705,355.16		5,722,340.61	
			$1,383,907,945.68
Deferred charges to operations: Payments for advanced mining royalties, exploration expenses and miscellaneous charges, chargeable to future operations.....	$4,272,621.94		
Less fund reserved from surplus to cover possible failure to realize advanced mining royalties.....	2,500,000.00		1,772,621.94
Investments:			
Outside real estate and other property.....			1,617,351.29
Sinking and reserve fund assets:			
Cash held by trustees account of bond sinking funds.....	$397,287.89		
($24,767,500 par value of redeemed bonds held by trustees, not treated as an asset.)			

Contingent fund and miscellaneous assets	1,542,398.24	
Insurance fund assets (at cost)	3,649,970.74	
Depreciation and extinguishment fund assets (at cost)	11,708,499.14	
Investments (at cost) for spe- Gary plant	10,145,788.59	27,443,944.60
Current assets:		
Inventories	$119,897,466.73	
Accounts receivable	58,836,772.50	
Bills receivable, customers	4,203,933.30	
Agents' balances	672,576.16	
Sundry marketable bonds and stocks	7,720,348.35	
Loans on collateral	7,600,000.00	
Cash in hand and subject to check $62,812,418.49		
Deposits loaned on call 2,824,390.35		
Time certificates of deposit 2,000,000.00		
	67,636,808.84	266,567,905.88
Grand total		$1,681,309,769.39

Liabilities.

Common stock	$508,302,500.00	
Preferred stock	360,281,100.00	$868,583,600.00
Stocks of subsidiary companies not held by U. S. Steel Corporation (par value)		23,400.00
Bonded and debenture debt:		
U. S. Steel Corporation 50-year 5 per cent. bonds $303,957,000.00		
U. S. Steel Corporation 10-60-year 5 per cent. bonds 170,000,000.00		
Total $473,957,000.00		
Less redeemed and held by trustees of sinking funds 18,956,500.00		
Balance outstanding	$455,000,500.00	
Subsidiary companies' bonds (guaranteed by U. S. Steel Corporation) $48,624,000.00		
Subsidiary companies' bonds (not guaranteed by U. S. Steel Corporation) 64,307,680.41		
Total $112,931,680.41		
Less redeemed and held by trustees sinking funds 5,811,000.00		
Balance outstanding	107,120,680.41	
Debenture scrip, Illinois Steel Company	35,069.18	562,156,249.59
Capital obligations authorized or created for capital expenditures made (held in the treasury subject to sale, but not included in assets):		
U. S. Steel Corporation 10-60-year 5 per cent. bonds	$30,000,000.00	
Subsidiary companies' bonds	10,320,000.00	
Total, not included in general balance sheet assets or liabilities	$40,320,000.00	
Mortgages and purchase money obligations of subsidiary companies:		
Mortgages	$2,514,626.37	
Purchase money obligations	1,717,500.00	4,232,126.37
Current liabilities:		
Current accounts payable and pay rolls	$23,853,579.40	
Special deposits or loans due employees and others	1,077,292.29	
Accrued taxes not yet due	2,728,361.61	
Accrued interest and unpresented coupons	7,166,344.29	
Preferred stock dividend No. 23, payable February 28, 1907	6,304,919.25	
Common stock dividend No. 13, payable March 30, 1907	2,541,512.50	43,672,009.34
Total capital and current liabilities		$1,478,867,385.30
Sinking and reserve funds:		
Sinking, depreciation and replacement funds	$38,665,489.73	
General construction fund for authorized appropriations	3,057,059.15	
Special construction fund for Gary plant	26,867,797.89	
Contingent and miscellaneous operating funds	7,424,705.80	
Insurance funds	3,741,829.28	79,756,881.85
Bond sinking funds with accretions		25,164,787.89
Represented by cash (and by redeemed bonds not treated as assets).		
Undivided surplus of U. S. Steel Corporation and subsidiary companies:		
Capital surplus provided in organization	$25,000,000.00	
Balance of surplus accumulated by all companies from April 1, 1901, to December 31, 1906	54,556,654.01	
Total surplus exclusive of subsidiary companies' intercompany profits in inventories	$79,556,654.01	
Undivided surplus of subsidiary companies, representing profits accrued on sale of materials and products to other subsidiary companies, on hand in latter's inventories	18,164,060.34	97,720,714.35
Grand total		$1,681,309,769.39

The condensed general profit and loss account for the year ending December 31, 1906, is as follows:

Gross receipts—Gross sales and earnings		$696,756,926.01
Less manufacturing and producing cost and operating expenses		*517,083,955.02
Balance		$179,672,970.99
Sundry net manufacturing and operating gains and losses, including idle plant expenses, royalties received, &c	$3,226,158.98	
Rentals received	564,761.83	3,790,920.81
Total net manufacturing, producing and operating income		$183,463,891.80
Other income:		
Net profits of properties owned, but whose gross revenue, expenses, &c., are not included in this statement	$1,416,140.34	
Interest and dividends on investments and on deposits, &c	3,952,802.59	5,368,942.93
Total income		$188,832,834.73
General expenses:		
Administrative and general expenses and employees' bonus funds (not including general expenses of transportation companies)	$14,304,110.45	
Taxes	4,356,126.36	
Miscellaneous expenditures and charges (net)	592,241.15	
Commercial discounts and interest	3,655,201.15	22,907,679.11
Balance of income		$165,925,155.62
Interest charges:		
Interest on bonds and mortgages of subsidiary companies	$6,391,042.74	
Interest on bills payable and purchase money obligations of subsidiary companies	170,435.96	6,561,478.70
Balance, being the aggregate net earnings of the several companies for the year		$159,363,676.92
Less profits earned by subsidiary companies on sales made and service rendered account of materials on hand in purchasing companies' inventories, and which profits have not yet been realized in cash from the standpoint of a combined statement of the business of the U. S. Steel Corporation and subsidiary companies		2,739,403.74
Net earnings for the year 1906		$156,624,273.18

* Includes charges for ordinary maintenance and repairs, approximately $29,000,000.

Maintenance and Betterment Expenditures.

The expenditures made by all companies during the year for maintenance, renewals and extraordinary replacements, amounted to $48,333,089.37, an increase in comparison with the expenditures for the same purposes during the preceding year of $10,861,319.74, or 29 per cent. The entire amount of these expenditures was charged to current operating expenses and to replacement funds reserved from earnings. The following table shows the amount of the expenditures made during the year for above purposes by the respective groups of operating properties:

	Ordinary maintenance and repairs.	Extraordinary replacements.*	Total.
Manufacturing properties	$20,648,213.19	$13,093,181.95	$33,741,395.14
Coal and coke properties	1,453,759.13	1,171,421.53	2,625,180.66
Iron ore properties	292,086.71	312,037.71	604,124.42
Railroads	6,137,244.71	1,915,980.15	8,053,224.86
Steamships and docks	640,063.34	1,920,905.80	2,560,969.14
Miscellaneous properties	145,543.36	602,651.79	748,195.15
Total expended in 1906	$29,316,910.44	$19,016,178.93	$48,333,089.37

* These expenditures were paid from funds provided from earnings to cover such requirements.

Inventories.

At December 31, 1906, the book valuation of the inventories of all properties equaled $119,897,467, an increase in comparison with December 31, 1905, of $6,509,470. As shown by the subjoined classification, this increase is represented entirely in the valuations of ores, raw materials and manufacturing and operating supplies on hand. The large volume of business conducted by the subsidiary companies required increased quantities of operating supplies, and their prices are somewhat higher than at the close of the preceding year. Semi-finished products for further conversion and finished products on hand show decreases. As in previous years, inventories were taken on the basis of actual purchase or production cost of materials to the respective companies holding them, unless such cost was above the market value on December 31, 1906, in which case the market price was used. The aggregate inventory valuation of all raw, partly finished and finished materials produced within the organization is very much below the market price on December 31, 1906. Inventories, however, include the profits on materials embraced in inventories which have been purchased by one subsidiary company from another; but, as shown by the general balance sheet, such profits are segregated and carried in a specific surplus account, and will not be included in the reported earnings of the entire organization until such profits shall have been converted into cash or a cash asset to the organization. The specific surplus account referred to is, therefore, practically a guarantee fund for these profits so locked up in inventories, pending realization in cash. The following is a general classification of the inventory valuations at December 31, 1906, in comparison with December 31, 1905:

	December 31, 1906.	December 31, 1905.
Ores	$42,330,919	$38,877,141
Pig iron, scrap, ferro and spiegel	7,071,656	5,866,552
Coal, coke and other fuel	1,610,161	2,045,309
Copper, nickel, aluminum and alloys	662,626	391,969
Pig tin, lead, zinc, spelter, dross and skimmings	5,958,744	2,558,568
Limestone, fluxes and refractories	1,455,996	1,517,441
Rolls, molds and stools	3,638,855	3,286,563
Manufacturing supplies, stores and sundry items not otherwise classified	10,133,018	8,735,731
Ingots, steel and nickel	750,146	890,217
Blooms, billets, slabs, sheet and tin bars, &c.	5,785,217	6,484,487
Wire rods	714,517	851,947
Skelp	1,502,314	1,440,700
Finished products	21,626,657	24,140,746
Mining supplies and stores (for ore and coal)	2,793,688	2,372,442
Railroad supplies and stores	2,167,005	1,373,087
Merchandise of supply companies	762,154	746,207
Material, labor aand expense locked up in bridge and structural contracts	$23,085,426	
Less bills rendered on account	19,031,366	
	4,054,060	5,225,202
Stocks abroad and on consignment	1,380,890	1,476,733
Material in transit	5,498,844	5,106,955
Totals	$119,897,467	$113,387,997

Production.

The production of the several properties for the year in comparison with the results for 1905 was as follows:

	1906. Gross tons.	1905. Gross tons.
Iron ore mined:		
From Marquette Range	1,442,290	1,359,722
From Menominee Range	1,874,680	1,871,979
From Gogebic Range	1,465,375	1,671,747
From Vermilion Range	1,794,186	1,578,626
From Mesaba Range	14,068,617	12,004,482
Totals	20,645,148	18,486,556
Coke manufactured	13,295,075	12,242,909
Coal mined, not including that used in making coke	1,912,444	2,204,950
Limestone quarried	2,227,436	1,967,355
Blast furnace products:		
Pig iron	11,058,526	9,940,799
Spiegel	150,044	158,071
Ferromanganese and ferrosilicon	58,807	73,278
Totals	11,267,377	10,172,148
Steel ingot production:		
Bessemer ingots	8,072,655	7,379,188
Open hearth ingots	5,438,494	4,616,051
Totals	13,511,149	11,995,239
Rolled and other finished products for sale:		
Steel rails	1,982,042	1,727,055
Blooms, billets, slabs, sheet and tin plate bars	1,096,727	1,253,682
Plates	836,399	780,717
Heavy structural shapes	620,823	484,048
Merchant steel, skelp, hoops, bands and cotton ties	1,240,548	982,782
Tubing and pipe	1,025,913	911,346
Rods	111,488	84,049
Wire and products of wire	1,399,717	1,283,943
Sheets—black, galvanized and tin plate	1,112,542	924,439
Finished structural work	643,622	404,732
Angle and splice bars and joints	176,730	150,265
Spikes, bolts, nuts and rivets	70,233	61,496
Axles	181,913	149,596
Sundry iron and steel products	79,736	28,236
Totals	10,578,433	9,226,386
Spelter	28,884	29,781
Copperas (sulphate of iron)	21,933	20,040
	Barrels.	Barrels.
Universal Portland cement	2,076,000	1,735,343

Employees and Pay Rolls.

The average number of employees in the service of all companies during the year 1906 in comparison with 1905 was as follows:

Employees of—	1906. Number.	1905. Number.
Manufacturing properties	147,048	130,614
Coal and coke properties	21,929	20,883
Iron ore mining properties	14,393	12,068
Transportation properties	16,638	14,524
Miscellaneous properties	2,449	2,069
Totals	202,457	180,158
Total annual salaries and wages	$147,765,540	$128,052,955

Statement to Stockholders.

The following is the greater part of a statement to the stockholders made over the signatures of Elbert H. Gary, chairman of the Board of Directors, and William E. Corey, president:

"In common with practically all lines of industry throughout the United States, the business of the subsidiary companies during the year 1906 reached a new high level. As shown by the statistics in this report, all previous operating and production records were exceeded. The uses for steel have been increasing since the organization of the corporation and are very much greater now than they were when the corporation was formed. The average prices received during the year for all steel products shipped to the domestic trade exceeded by 5 3-10 per cent. the average received in 1905, and were about 8 per cent. lower than the prices which prevailed in 1902. The condition of the trade has been such that prices of many of the commodities produced could have been advanced; and as wages have been largely increased and freight rates raised it has been argued by some of the manufacturers of steel that prices of their manufactured commodities should be correspondingly advanced; but it has been decided by the management of this corporation and of its subsidiary companies to make no changes in prices at this time. Effort has been made to obtain prices which would be sufficient to assure net earnings permitting of a maintenance of the physical condition of the properties at a modern standard of efficiency, returning a fair rate of interest on capital, and yielding a reasonable surplus as a reserve or for use in

protecting and strengthening the properties, so as to retain a fair position in the trade. This policy, it is believed, has proved to be of substantial benefit to the interests of the corporation.

"The orders for steel products of all kinds, both for immediate and for future shipments, were received in large volume up to the close of the year. Since January 1, 1907, the orders received have been somewhat less than they were during the months immediately preceding that date, but they are larger then they were during the same months in 1906, and have about equaled the productive capacity of the mills, notwithstanding the tonnage of unfilled orders on the books at close of the year equaled 8,489,718 tons of all kinds of manufactured steel and iron products, in comparison with 7,605,086 tons at the close of 1905.

EXPORT BUSINESS.

"The export business of the subsidiary companies continues to show material improvement. Export shipments during the year amounted to 1,079,319 tons of various products, an increase of 13 per cent. over the tonnage shipped in the previous year, while the gross receipts exceeded those of 1905 by 28 per cent. Since the export business of all the subsidiary companies was concentrated, late in 1903, in the hands of a single selling organization, there has been steady and systematic development in all foreign markets where conditions are such as to permit of the sale of products without excessive reductions in price and upon safe terms. The aim has been to build up a permanent and continuous export trade with a view to providing markets which at all times may be relied upon to absorb a fair proportion of the total production, rather than to sell material in foreign countries only at times when the domestic market is unable to take the entire output of the mills. In pursuance of this policy better prices have been secured for material exported than would have been possible had the business been of an intermittent character, and offerings in foreign markets made only at times when accumulated stocks or a scarcity of domestic orders would have rendered export sales especially desirable. During the past year the demand throughout the world for steel products has been exceptionally strong, most of the foreign mills having been fully occupied, and in many cases sold far ahead of their capacity. In many important lines the prices realized in 1906 were equal to those ruling in the domestic market, while for all products they were considerably higher than in previous years. The collateral advantages accruing to the manufacturer and consumer, both from the continuous and the permanent maintenance of a substantial export trade, are important.

"The expenditures made by subsidiary companies during the year for additional property, new construction, improvements and extraordinary replacements, aggregated, exclusive of outlays for new plant in the Chicago District, the sum of $46,451,166.48. Since the organization of the corporation there has been expended for additional property, new construction and extraordinary replacements the sum of $200,575,000. This does not include the cost at date of acquirement of the Union Steel and Clairton Steel properties. These outlays have greatly strengthened the properties, both in respect of increasing their productive and earning power, and in maintaining the properties at a high standard of efficiency. As an index of the extent to which the foregoing outlays have increased the earning power of the manufacturing properties since April 1, 1901, by reason only of additional productive capacity, the following comparisons are given:

	Percentage of increase in capacity January 1, 1907, compared with April 1, 1901.		
In production of products for further conversion:	Due to purchase of other companies.	Due to additions and improvements made.	Total increase.
Pig iron and blast furnace products	16.50	46.62	63.12
Bessemer and open hearth steel ingots	13.35	43.29	56.64
Blooms, billets and slabs	17.08	44.69	61.77
Sheet and tin plate bars	7.90	81.15	89.05
Wire rods	20.95	Dec. 7.77	13.18
Products for sale:			
Finished steel and iron products	14.32	30.01	44.33
Universal Portland cement	...	406.67	406.67

"Contemporaneously with the enlargement of the manufacturing properties as above, the facilities of the iron ore, coke and coal, and transportation companies have likewise been increased. In continuance of the established policy of expending money liberally for maintenance and necessary enlargement in order to maintain a position in the trade and to secure a pro rata share of the growing requirements of the country for steel products, large appropriations have been authorized for extensions and improvements. The amount unexpended on these appropriations at January 1, 1907 (exclusive of the requirements for the new plant at Gary, Ind., referred to below), equaled approximately $85,000,000. These appropriations cover a wide range of work in all departments. It is doubtful, however, if more than 70 per cent. of the above aggregate will be expended in the year 1907.

THE GARY PLANT.

"In the annual report for 1905 reference was made to the decision to erect a large and modern steel plant in the Chicago District. The plant will be located at Gary, Lake County, Ind. There have been organized the Indiana Steel Company, which will construct the steel plant, and the Gary Land Company, which will own and improve the site for the city and will construct a large number of dwellings and business buildings. It is proposed to sell improved and unimproved property in the city to residents at about cost plus a fair interest charge, but under such restrictions as to the uses to be made of the property as may be found to be fair and reasonable. During the year substantial progress was made in the construction work, both on the steel plant and the city; the expenditures, including payments made for real estate, amounted to $4,720,158.91. There has been acquired for use for plant purposes, for the city of Gary, and for railroad yards and terminals, about 7500 acres of property, with a large frontage on the shore of Lake Michigan. The appropriations approved to this date for construction work at the steel plant comprehend eight blast furnaces, together with ore unloading and handling machinery, 56 open hearth furnaces, blooming and rail mill, various finishing mills, central power plant, foundries, machine shop and equipment, central pumping station, and other accessory works; also the construction of harbor and docks. For the city of Gary the appropriations cover 381 dwelling houses, school and hotel buildings, water works, sewerage system, gas works, paving, sidewalks, grading, &c. The estimated amount yet to be expended on account of the foregoing approved work, and including payments to be made in 1907 for balance cost of real estate, is $40,000,000. On December 31, 1906, there was reserved in the special fund available for account of these expenditures a balance of $26,867,797.89. The general plans adopted include further additions and extensions which are very substantial, but the detailed plans are not yet fully developed.

CEMENT INTERESTS.

"On October 1, 1906, the Universal Portland Cement Company, a subsidiary company, took over the business theretofore conducted by the Illinois Steel Company of the manufacture and sale of Portland cement. The new company has in operation in the Chicago District three cement plants, the output of which in 1906 equaled 2,076,000 barrels, being more than the entire production of the United States in 1896. The company has now under construction at Buffington, Ind., a new plant, which will have a capacity of 2,000,000 barrels per annum, and at Universal, Pa., near Pittsburgh, a plant with a capacity of 1,500,000 barrels annually. It is expected that in the summer of 1907 both these plants will be completed and in operation. They will increase the company's capacity to 6,000,000 barrels per annum.

IRON ORE PROPERTIES.

"From time to time since the organization of the corporation various additional iron ore properties have been acquired in the Lake Superior ore region. The tonnage of new ore thus obtained is very large. It is, however, doubtful if the quantity of new ore so obtained will prove to be sufficient to meet the constantly increasing demands upon the ore reserves made by the country's

growing requirements for steel products. In each succeeding year it has become more difficult to acquire new ore properties geographically located so as to permit of the economical use of their ores at the furnaces of the subsidiary companies. Moreover, for such properties as occasionally could be obtained it has been found necessary to pay constantly increasing rates of royalty. In view of the foregoing and in order to safeguard its future requirements for ore, the corporation, after extended negotiations and careful consideration by the officers and by the Finance Committee and Directors, made an arrangement (subject to authorization by the stockholders) for the lease on a royalty basis of the so-called Great Northern Railway ore properties, comprising the properties owned in fee by, or under lease to, the Great Northern Railway Company, the Northern Pacific Railway Company, and others. When concluded this lease is to be taken by the Great Western Mining Company, a subsidiary company of the United States Steel Corporation, and the performance of the obligations assumed by that lessee is to be guaranteed by the United States Steel Corporation. Under the proposed lease the royalty to be paid for the ore is $1.65 per gross ton, for ore containing 59 per cent. of metallic iron, delivered in docks at head of Lake Superior. If the ore grades higher or lower than 59 per cent. in metallic iron the royalty will be increased or decreased according to a fixed scale. The above royalty of $1.65 per ton is for ore to be shipped in 1907, and the base price increases at the rate of 3 4-10 cents per ton each succeeding year. The minimum to be mined and shipped is 750,000 tons in 1907 and increases by 750,000 per year until it reaches 8,250,000 tons, and thereafter the annual minimum continues on that basis. The lease will continue until the ore is exhausted unless on January 1, 1915, the lease is terminated, under the option reserved to the said lessee. The ore is to be mined by the lessee. As several Directors of the corporation are directly or indirectly interested in the companies which own or control these ore properties, the transaction will be submitted to the stockholders and proxies at the annual meeting. The form of lease and the proceedings relating thereto may be examined by stockholders at the offices of the corporation if desired.

WAGE ADVANCES AND BONUSES.

"An increase was made on January 1, 1907 (on March 1, 1907, in case of the coke companies), in the wages and salaries of approximately 131,000 employees, or 65 per cent. of the total employees of all companies. The advance applied to practically all employees who are paid on basis of day rates and to a considerable number of those paid on basis of a monthly salary. The average rate of increase in wages and salaries of the employees affected equaled 6 6-10 per cent. The amount of increase in the total pay roll attributable to above advance will be approximately $6,000,000 per annum. The average rate of pay received by all employees is now the highest paid at any time since the organization of the corporation.

"Following the practice heretofore adopted, a substantial amount was distributed as a bonus for the year 1906 to a large number of employees who merited the same. Included in the distribution were about 21,000 shares of common stock which were previously purchased in the market for that purpose and which will not be delivered until the expiration of three years and the compliance with various conditions named for the protection of the companies. From the bonus fund to be ascertained at the end of 1907 in the usual way it is proposed to establish a separate fund, to be known as the pension fund, and to be used for pension purposes."

George R. Hilty of Chicago has secured control of about 22,000 acres of coal lands in the Johnson Mesa in New Mexico. The coal possesses both domestic and coking qualities and the acreage includes timber suitable for mining purposes, besides plenty of water necessary for the installation of coke plants. Mr. Hilty was connected for many years with iron and steel manufacturing companies, comprising the Illinois Steel Company, the Republic Iron & Steel Company, the Birmingham Steel & Iron Company and the Sayre Mining & Mfg. Company, Birmingham, Ala.

The Grant Double Rivet Spinning Machine.

For riveting both ends of a rod or wire simultaneously by a process of rolling or spinning instead of hammering, the Grant Mfg. & Machine Company, Bridgeport, Conn., has recently brought out a rotary double spindle horizontal rivet spinning machine, shown in the accompanying illustrations. An unusually wide range of articles may be riveted together in this machine by this noiseless and blowless method, and it is claimed that a greater quantity of work with a better finish and more certain uniformity may be obtained than by any other machine intended for a similar purpose. The machine is a development of the single spindle machine made by the same company, and differs from it principally in its ability to perform the rivet spinning at both ends of a rod at one time. The machine is particularly adapted to the manufacture of transmission chains for automobiles, bicycles, tool drives and kindred work, and in general to all sorts of riveted goods that require a rivet on each end, such as hinges and hardware specialties. It does away with the necessity of making special rivets, and reduces the expense of material used, inasmuch as the excess length necessary for the riveting may be reduced quite materially. This is of moment where the rivets are made of copper, brass or high priced metals, and is a result of the fact that the body of the rivet is not upset or bent, as is almost certain to be the case where the rivet is headed by blows against the end.

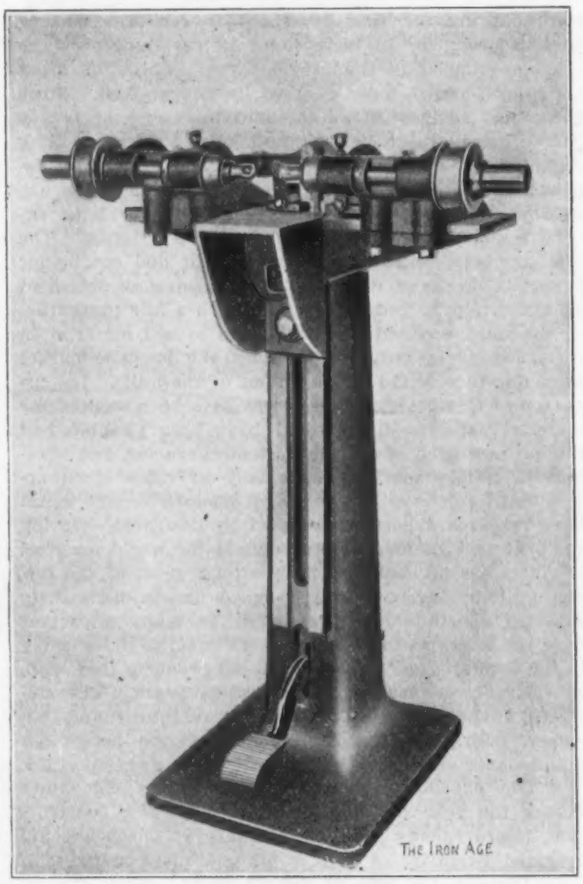


Fig. 1.—A Rotary Double Spindle Riveting Machine Built by the Grant Mfg. & Machine Company, Bridgeport, Conn.

The illustration, Fig. 1, shows the complete machine, and Fig. 2 is a larger detail of the head from a different point of view. It will be seen that the essential working parts are two spindles carrying rolls at their inner ends, which are brought to bear against the ends of the wire or rod to be riveted. These spindles are revolved by pulleys on the splined sleeves within which the spindles revolve. The rolls are of a special form, two in each spindle, and are arranged to rotate independently and in opposite directions when they are in action, swedging the rivet shank into the form desired.

Special sizes of rolls may be inserted for rivets of within a certain range of sizes, and a perfectly uniform result may be secured on rivets of any size from the smallest to one having a shank ⅜ in. in diameter.

A special advantage of the principle of action employed is that the diameter of the body of the rivet is not enlarged, therefore a flexible joint may be riveted with certainty that it will not be caused to bind. The finished heads on the rivet shanks are in all cases perfectly smooth and show no marks of rivet tools. Soft brass rivets or steel rivets may be handled with equal facility. A change from one size or shape of rivet to another may be accomplished in a few minutes. For changes in the length of rivets, a rough adjustment is obtained by sliding the heads on the table, and a fine adjustment by nuts, which are provided for the purpose. While the rolls are in action they are forced toward each other and against the ends of the rivet by depressing a foot treadle on the base of the machine, which through a rod and toggle mechanism produces what may be compared to the feeding movement. The riveting operation requires practically no time at all and the output of the machine is limited only by the skill of the operator in handling the material expeditiously.

The machine is constructed with careful attention to accurate running and durability. The spindles are ground to size and run in phosphor bronze bearings and ball thrust bearings between the spindles and the ends of the levers that move them take the axial thrust that attends the rolling of the rivet head. All of the wearing parts are hardened and ground and are claimed to be fully capable of withstanding the severest usage. Each machine is supplied with a countershaft having self-oiling boxes, and with the necessary wrenches. Roll holders are fitted with rolls suitable for various sizes of rivets, as required, and are included in the equipment of the machine. There are also special holding fixtures for work of the various kinds which it might be desired to rivet.

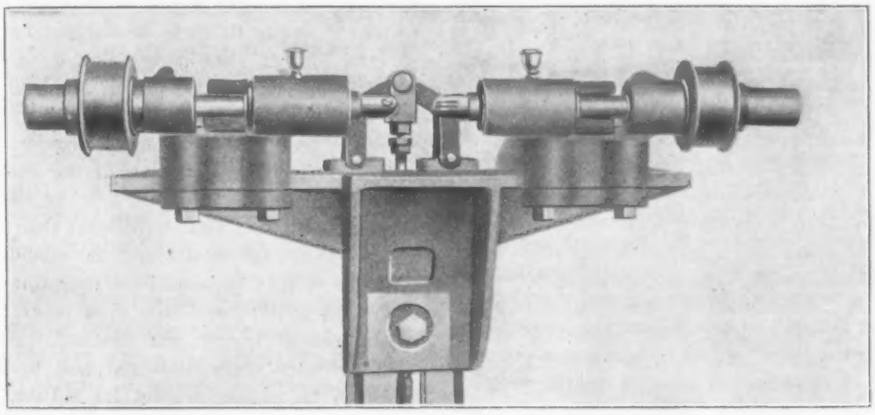


Fig 2.—A Detail of the Head of the Grant Double Rivet Spinning Machine.

The American Bridge Company of New York has published an illustrated quarto 9½ x 12½ in., containing 55 pages of views of noteworthy buildings erected in 1906 for which the structural steel was supplied by this company. Most of the reproductions are full page and the collection represents a great variety in style and size. The Metropolitan Life Insurance Company's tower, for example, contrasts in its proportions with the huge Hudson Company's Terminal Buildings at Church and Dey streets, New York, shown on a facing page, the latter calling for 26,000 tons of steel. Some monumental public buildings are shown, including the New York Public Library, the National Museum at Washington, and the Carnegie Institute and Library at Pittsburgh. There is also a notable collection of office and mercantile buildings in the large centers of the country.

The Norfolk & Western Railroad recently placed an order for 1000 steel coal cars with the Pressed Steel Car Company, Pittsburgh, and in addition it will build 1500 coal cars at its own shops at Roanoke, Va.

The Mexican Trip of Cleveland Business Men.

The party of Cleveland manufacturers and other business men representing the Chamber of Commerce at that city who went on a three weeks' trip to Mexico with the view of extending the Cleveland trade with that country returned home last week much pleased with their observations. The party spent 10 days in Mexico, visiting the capital and a number of other leading cities. While in the city of Mexico the party was received by President Diaz. In speaking of the trip, F. F. Prentiss, president of the Cleveland Chamber of Commerce and also president of the Cleveland Twist Drill Company, said:

"Mexico has undergone a wonderful development since I first visited that country 15 years ago. The trade between Mexico and the United States is increasing rapidly, and in a few years this trade is bound to be double what it is at present. In my opinion there is no country where there is as great an opportunity for consumption of American products except the countries of South America. We are taking trade in Mexico away from the Germans, English and French, and American products will soon predominate in that country. In the mines and railroad shops there are now more American machinery and tools in use than those made by any other country and I think it will not be long until practically all the machinery and machine tools will be of American make. There has been a steady change in Mexico for articles of better quality. Formerly the Mexicans considered price first; now they consider quality first. The trade opportunities and business conditions in Mexico were fully up to the expectations of some members of our party and greatly surpassed the expectations of others."

At least two Cleveland manufacturers made arrangements to establish agencies in Mexico while on the trip, and others will probably take similar action. Those who arranged for the opening of agencies were H. A. Higgins, of the Standard Tool Company, and S. H. Moore, Jr., of the Republic Belting & Supply Company.

The Wickwire Steel Company.

The Wickwire Steel Company has been incorporated, with main offices at Buffalo, N. Y., although the address of the company will be Cortland, N. Y., until operations commence at Buffalo. The company is made up of the present members of Wickwire Brothers, Cortland, N. Y., who now operate open hearth steel furnaces, a wire rod mill and wire mills manufacturing wire cloth, wire netting, wire nails and a general line of wire.

The Wickwire Steel Company will build a blast furnace of about 300 tons daily capacity, with docks and unloading machinery, and ground will be broken early this spring to commence erection. The pig iron produced will be for a supply for the open hearth steel furnaces of Wickwire Brothers, at Cortland, N. Y., but the company will have a surplus of iron for the market. The president of the new company is T. H. Wickwire.

THE IRON AGE

1855—1907.

New York, Thursday, March 21, 1907.

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The Stock Market Collapse and Business.

Even if there were perfect agreement on the causes of the collapse in the New York stock market on Thursday, March 14, the data would be still far from complete for answer to the question how far the tremendous decline and liquidation of last week will affect the business of the country. Emphasis is laid on two unusual features of this "silent panic"—the absence from the market of any considerable public following and the absence of failures. Arguing from these, there have been expressions, especially from centers remote from New York, to the effect that some rich traders have lost money which they can afford to lose and others have lost paper profits, but that apart from Wall Street no deep wounds were made and therefore business will go on with little regard to the catastrophe.

The element of manipulation doubtless played its part. There were evidences of a powerful force exerted to accomplish a result not fully made clear. But leaving out that factor there was plain evidence of a lack of confidence in the values of railroad securities—certain securities in particular. It is the extent of this lack of confidence that constitutes the chief unknown quantity in the problem now presented. For one thing, intimation has been given of a federal inquiry into railroad property values with a view to establishing a basis for reduced freight rates. Such a proposal comes down finally to a determination by some commission or board of what constitutes a reasonable profit on a railroad investment. That would be revolutionary and disturbing, highly so. Without at this time discussing stock watering or rate fixing, it is enough to say, as bearing on the question of confidence, that the thousands of holders of American railroad securities at home and abroad will see nothing helpful to their interests in a move looking to the reduction of railroad earnings. At the same time the railroad stockholders must expect to face something like that which the insurance policyholder faced in 1905—the effect upon his holdings of damaging public disclosures concerning high officials. Yet now, as then, the conviction that betrayal of trust is the exception and faithful administration the rule will do much to counteract hysteria.

Another important fact is that when the worst is known generally comes the beginning of the mending. It may be recognized, moreover, sooner than now seems likely, that to kill prosperity would be paying a fearful price for the notion that a specific has suddenly been found for railroad evils. There has been railroad lawlessness, but it is a mistake to penalize the whole country for it. A grave problem is before the people, and it must be patiently worked out. In 1896 the nation refused a proffered cure that was infinitely worse than the alleged disease. There should be confidence now—whatever the distrust as to some other things—that a way will be found of remedying what is wrong in railroad financing and operation, and that the business situation will be permanently better for finding it.

So much has been said lately about the effect of the railroad turmoil upon credit, that the partial inability of the railroads to get funds for improvements might be judged to be all that industry has to fear. But it is to be remembered that for fully a year and a half the strained condition of the world's money market has been discussed. Russian and Japanese demands were the menace to begin with; then it was world prosperity; and in the United States attention has been concentrated on the dangers of a heavy speculative demand for money accompanying the unprecedented legitimate demand of the railroads and of manufacturers and merchants. If the country at large has not been speculating in Wall Street it has gone extensively into real estate operations, and its investments in a variety of mining stocks have been inordinate. The crash in Wall Street, therefore, is not to be thought of by itself in estimating the course business will take; every unpromising factor in the situation at home and abroad will come up for appraisal, now that the pellmell of prosperity has been checked.

Manufacturers and financiers have been so free to say that the country would be better off if it had less to do that theoretically there should be no great regret now for the loss of that percentage of proffered business which has been poorly done or not done at all. If, for example, the check to new enterprise which is expected from the recent culmination of prosperity troubles and railroad troubles should result in cutting down the freight offered the railroads only by that amount that has long been over and above what they could take care of, the shrinkage would not be calamitous. But the difficulty is that no assurance ever comes with such a movement that it will stop at a point bringing a nice adjustment of supply and demand. However, if the strain of both speculation and new projects should be taken off the money market for a time, it might come about that railroad borrowing could be resumed later in the year under much more favorable auspices. Meantime a saner view will be possible of what should enter into the Government programme for the railroads.

So far as the iron trade itself is concerned the statistics for February indicated high point in the rate of production, while consumption is likewise unprecedented. In health and strength its present condition has never been equaled. Whatever excesses must be paid for after this run of prosperity, the iron trade has been a very small contributor to the reckoning.

A Great Record in Steel Production.

The statistics of Bessemer steel production in the United States in 1906 show a good increase, considering that only a single new Bessemer plant, apart from small steel foundry operations, was started up in that year. To have raised the high record of 1905, which was 10,941,375 gross tons, to 12,275,253 tons, was a great achievement and shows to how large an extent the country's dependence is still upon the pneumatic process, in spite of the very positive prophecies put forth now and again of the waning vogue of Bessemer steel. Such a remarkable rail production as that of 1906, which was 3,705,642 tons, was only possible through the high efficiency reached in the operation of the important rail mills of the country connected with leading Bessemer works. The open hearth rail production last year was less than 250,000 tons, or only about 6 per cent. of the

total. The open hearth percentage for 1905 was also about 6, the tonnage being 183,264 in that year, as against 3,192,347 tons of Bessemer rails.

The course of Bessemer and open hearth steel production in the past seven or eight years is interesting, the feature of the comparison being that open hearth steel has never once fallen below its record production since it became a factor of any significance. Only three times since open hearth steel began to be made in the United States on a commercial scale, in 1869, has any year failed to establish a new record. Going back to the boom year 1899, the production of Bessemer and open hearth ingots and castings in this country has been as follows, in gross tons:

	Bessemer ingots.	Open hearth ingots.
1899	7,586,354	2,947,316
1900	6,684,770	3,398,135
1901	8,713,302	4,656,309
1902	9,138,363	5,687,729
1903	8,592,829	5,829,911
1904	7,859,140	5,908,166
1905	10,941,375	8,971,376
1906	12,275,253	(est.) 10,600,000

The building at Gary, Ind., of 56 open hearth furnaces, for which appropriations have been made, half of the number being now under construction, and the other new open hearth plant for which the Steel Corporation's plans are now being carried out, taken in connection with the decision to dismantle the Bessemer plant at Duquesne, point strongly to the overhauling of Bessemer steel production by open hearth in 1908, or at the latest by 1909. Bessemer steel capacity may not be to-day at its limit, for existing plant is capable of greater output in the way that has been seen in the past few years, when there has not been sufficient new plant built to account for the increases. Auxiliary plant has been improved, as, for example, by providing more cupolas for preheating where cold metal is used, by providing more soaking pits so as to increase the output of a blooming mill and thus permit faster operation of the converters, by increasing mechanical equipment for handling ladles, or changing tracks so as to take care of ingots more rapidly, or by increasing the size of converters. However, the question of converting and handling capacity is really incidental to the question how much Bessemer steel will be called for and the other question as to the supply of Bessemer ores that can be had for making steel that will meet the latest requirements as to phosphorus, particularly in rails.

The above estimate of 10,600,000 tons for open hearth steel production for 1906 is based in part on the basic pig iron production in 1906 as compared with other years, and in part on the United States Steel Corporation's production of open hearth ingots in 1906, which its report shows was 5,438,494 tons. As the Steel Corporation's production of open hearth steel averaged 51.3 per cent. of the total in the four years preceding 1906, and the independent erection of open hearth plant last year probably equaled the Steel Corporation's increases at Homestead, South Chicago, Vandergrift and Cleveland, that percentage may fairly be taken as a basis of reckoning for last year. It is probable that the official figures for the production of steel ingots and castings of all descriptions in the United States last year will show a total exceeding 23,000,000 tons. This means an expansion of more than 9,000,000 tons in two years, the total for 1904 having been 13,859,887 tons, while that of 1905 was 20,023,947 tons. Thus far the pace in 1907 has been such as may well lead to even a greater record if the market shall require that pace to be maintained.

Special Inducements to Secure Sales.

The use of a special inducement to secure sales has long been a factor in retail trade, but has only recently extended to the manufacturing industry. Occasional complaint is heard regarding it, and as the custom may extend to large proportions the subject is one worthy of consideration by those business men who have to put upon others the responsibility of the purchasing department. Briefly told, the system is that the selling company, through the medium of letters, agrees to give a valuable present with the goods, the general method being revealed in the following excerpt from a typical follow-up letter:

"Do you care to get, free, a very fine, 20-year, solid gold watch? Read the circular herewith inclosed and see the terms of the offer which we are making. Bear in mind that this magnificent watch is to be had absolutely free of all cost. We only ask that you sign and return us the herewith inclosed 'approval request.' On receipt of the request we will forward to you, on 30 days' trial, an 80-gallon barrel of the best lubricating oil, but you are not to pay for the oil unless you find it perfectly suited to your machinery. If any jeweler to whom you show the watch does not pronounce it a good one, you can send both it and the oil back to us and we will pay the entire charges. There is no deception in our offer to you in any way. The watch is perfect and the oil is the best on the market. We take all the risk and you take none."

Granting that the goods sold by this method are just as worthy as those of other makes, the method of securing business is still objectionable from the standpoint of the buyer. The effect which such an offer may have upon those with the authority or influence to determine the character of purchases must be taken into account. No manufacturer wishes the selection of goods bought for use in his works governed by anything but merit and economy. It is fair to presume that he has a watch which he would prefer to any offered him in the way of premium; but he may have some one in his employ who would like to get a watch for nothing and who might be influenced in his expressed opinion by the allurement. Possibly the cost of the goods might be no more than if the cost of the watch and the system were charged up to other forms of advertising; but there is a sort of irregularity in such a transaction, judged from commonly accepted standards of business methods, which will appeal to a manufacturer if he gives the subject a little thought. It is a species of the sort of thing that the owner of an industry has constantly to guard against, the danger of partiality and prejudice, and consequently with the head of the establishment the inducement should count against rather than in favor of goods so offered, no matter what may be their actual worth.

The Steel Railroad Tie.

In view of the great interest taken in the action of the Pennsylvania Railroad Company in ordering the steel ties in its track at Mineral Point, Pa., to be replaced with wooden ones, the following communication from the chief engineer, A. C. Shand, to the *Railroad Gazette*, is highly important:

"Relative to the report made of the recent accident to train No. 29 on the Pennsylvania Railroad in the vicinity of Mineral Point, full copy of which appeared in your issue of Friday, March 1, 1907, I think you have written a very fair and creditable editorial on the subject, including not only the Pennsylvania Railroad acci-

dent but the accident on the New York Central which occurred recently. The general impression seems to prevail, however, in nearly all the papers which have been brought to my observation, that the steel cross ties for railroad track purposes are a failure.

"I would be greatly obliged if you would call the attention of your readers to the fact that, after most careful observation and study of the subject, I am more than ever impressed with the necessity in the near future of a substitute for wooden cross ties, and so far no material has been offered as a substitute that will meet the requirements except metal. I think, however, that all ties tested are a little lighter than they should be, and am firmly of the opinion that none of the fastenings for holding the rail in position to the tie is adequate to the requirements. This was emphasized in the accident we had, above referred to. When any suitable fastening shall have been designed, and there is no doubt in my mind that it will be in the near future, either by the Carnegie Steel Company or by some one else, I have not the slightest doubt that the experiments in connection with the steel ties will go forward, not only on this system, but on other leading railroads.

"On the Pennsylvania Railroad alone we are using about 4,000,000 cross ties a year, and with the increased price for cross ties in the last five years, and the difficulty in purchasing even at the increased price, it is obvious that some substitute must be secured before long. The quality of the timber also has depreciated enormously in the last five years, so that it becomes imperative that we should either purchase the best cross ties that the market affords and creosote these ties and use heavy tie plates, or secure a steel cross tie or one of some other composition which will answer the requirements. This company a number of years ago laid four sections of track with the steel tie as used at the time by some of the English railroads. These were of the inverted trough design, but did not give satisfactory results.

"What I am afraid of is that the general public, and the engineering profession in particular, will dismiss the subject of steel ties as a failure, when in reality they must come sooner or later, and the more intelligent thought given to this matter the sooner a suitable tie will be furnished which will be satisfactory in every particular."

This utterance from one who occupies so high an official position, and therefore fully appreciates the importance attached to whatever he may say, should set at rest the popular belief that the Pennsylvania Railroad Company has placed the seal of its condemnation on the steel tie. The manufacture of steel ties is one which has in it the promise of great possibilities, and the entire steel trade is therefore deeply interested in anything which may develop regarding it. There is no doubt that the ingenuity of American manufacturers will be successfully applied to the production of a steel tie which will fully meet the requirements of railroad engineers.

The Avery Stamping Company, Cleveland, Ohio, made an interesting exhibit of special pressed steel work at the Cleveland Automobile Show February 18 to 23. The company is distributing circulars illustrating this exhibit, which consisted of 32 separate articles showing a great variety of forms of pressed steel work, comprising automobile parts and special stamping.

The pig iron production of Sweden in 1906 was 596,400 metric tons, against 530,800 tons in 1905. In 1906 the Bessemer steel ingot production was 84,700 tons and the open hearth production 303,300 tons, against 78,200 and 281,500 tons respectively in 1905.

British Pig Iron Production in 1906.

Statistics just collected by the British Iron Trade Association show that the total production of pig iron in the United Kingdom in 1906 was 10,149,388 gross tons, which compares with 9,592,737 tons in 1905, 8,562,658 tons in 1904, and 8,811,204 tons in 1903. The production of 1906 was thus 556,651 tons greater than in 1905, and 1,586,730 tons greater than in 1904. In the table below the production of pig iron is given by districts for 1906 and the two years preceding.

District.	1904.—Tons.	1905.—Tons.	1906.—Tons.
Scotland	1,339,740	1,378,391	1,451,068
Durham	981,197	1,030,709	940,741
Cleveland	2,234,345	2,507,715	2,639,964
West Cumberland	551,341	872,478	930,754
Lancashire	522,925	580,909	678,657
South Wales and Monmouth	779,625	886,686	883,660
Lincolnshire	321,454	366,717	422,311
Northamptonshire	223,932	231,175	282,110
Derbyshire	292,473	306,055	417,686
Notts and Leicestershire	310,838	335,162	296,520
South Staffordshire	373,196	415,792	424,876
North Staffordshire	246,037	258,651	296,550
South and West Yorkshire	263,413	289,667	335,853
Shropshire	47,597	47,782	52,055
North Wales, &c	74,545	84,848	96,583
Totals	8,562,658	9,592,737	10,149,388

The production of different descriptions of pig iron in the past three years is given in the following table:

	1904.—Tons.	1905.—Tons.	1906.—Tons.
Forge and foundry	3,841,975	4,276,943	4,587,606
Hematite	3,362,883	4,070,222	3,990,820
Basic	1,192,120	1,057,999	1,263,317
Spiegel, &c	165,680	187,573	307,645
Totals	8,562,658	9,592,737	10,149,388

In recent years the production of basic iron has been an increasing percentage of the total, and that of hematite, or Bessemer, a decreasing percentage. Fourteen years ago, or in 1892, the total production of hematite iron was 3,120,200 tons, while the total of basic iron was less than 300,000 tons. The basic production in 1906 is seen to represent more than a three-fold increase in the 14 years, while in the case of Bessemer iron the increase has been about 25 per cent.

The production in the second half of 1906 showed an increase of more than 300,000 tons over that for the first half of the year—being 5,243,964 tons against 4,905,424 tons. The average production per furnace in blast in 1906 was 27,598 tons. In 1905 it was 27,724 tons. Twenty-two more furnaces were in operation in 1906 than in the previous year, and the efficiency of the additional stacks was evidently less than that of the average. The average number of furnaces in blast in 1906 was 367¾, and the number out of blast 149¼, making the total number of furnaces in the United Kingdom 517.

There was a marked decline in the stocks of pig iron in public stores in the Cleveland District, or from 704,900 tons at the close of 1905 to 538,154 tons at the close of 1906. In the Cumberland District public store stocks increased in the year from 51,863 tons to 102,050 tons. In Scotland public store stocks decreased from 15,593 to 5286 tons. Stocks in makers' hands are not reported, but the total is estimated at not over 500,000 tons.

Iron Molders' Union Convention.—The Iron Molders' Union, by a recent vote of its members, has decided to hold a national convention at Philadelphia in July. About 500 delegates will be in attendance. The last convention of the union was held in Toronto, Ont., in July, 1902. In suggesting matters that will come up for consideration the *Iron Molders' Journal* raises the question whether the constitution of the union may not be strengthened and the efficiency of the organization improved. An entire change in policy relating to the molding machine is one of the proposals that will be considered by the convention, and it is intimated that the possibilities of accomplishing greater results through increased payments into the treasury will have attention. It has been reported that strike benefits and other strike expenses of the national organization were $750,000 in 1906, apart from the large sums spent by local unions.

Shipbuilding in Ontario.

Projected Works at Fort William.

TORONTO, March 16, 1907.—Fort William, which, like its close neighbor, Port Arthur, has just been raised by an act of the Legislature to the dignity of a city, has entered into a provisional arrangement for the establishing of two important new steel consuming industries within its municipal bounds. These are a shipbuilding plant and a plant for the manufacture of wire. Agreements that were the outcome of negotiations between a civic committee and the promoters of the two projects were submitted to the City Council of March 12 and adopted by a unanimous vote. As the city's credit is involved, the agreements must receive the ratification of the ratepayers before they can be of any force to bind the municipality. By-laws are to be prepared at once, and the earliest opportunity is to be given to the ratepayers to signify their will thereanent at the polls.

The agreement with the parties who propose to engage in shipbuilding calls for the construction of docks and yards at a cost of $1,000,000. Over and above the amount of that outlay the concern must have a working capital of $500,000. The building of the works is to be begun as soon as the by-law is approved. During the first two years at least 350 hands must be kept employed, and thereafter the number must be not less than 500. The dry dock is to be 600 ft. long, and the yards and docks are to be spacious enough for it to be possible to have as many as six vessels under construction in them at one time.

On its part the city undertakes to contribute $15,000 of the cost of a site, or 50 per cent., if the total cost exceeds $30,000; to grant for 10 years exemption from all taxes except those on school account, and to guarantee for 20 years an annual interest rate of 2 per cent. on $1,000,000 of the company's bonds. A part of the land required for the site has already been secured by the company, and for the remainder an adjoining property is to be purchased for $35,000. It is understood that the half of this amount is all the city will have to contribute to the cost of the site.

The Mayor told the Council that he was satisfied the parties behind the promoter, Mr. Lynn, were men of substance. Mr. Lynn is described as the organizer of the tug trust, and the shipbuilding trust, and as one of the most prominent marine men on the Great Lakes.

If the parties who propose to build shipyards and a dry dock at Fort William make the latter work acceptable to the Dominion Government they will be entitled to a yearly subsidy equal to 3 per cent. of the cost of the dry dock, such subsidy to be continued for a period of 20 years from the date of the completion of the work.

The Proposed Wire Plant.

The Imperial Steel & Wire Company, which has works at Collingwood, on Georgian Bay, is the private party to the negotiations for the establishing of the wire plant at Fort William. It appears to be the intention to continue the Collingwood Works and to operate a plant at Fort William solely for the trade west of the lakes. The agreement calls for the building of a factory at the latter named place to cost at least $200,000, to employ not less than 200 hands all the year around, to manufacture 100 tons of wire per day, to be in operation by June 1, 1908. The city is to give a free site of 10 acres, with 250 ft. of river frontage, to fix the assessment at $50,000, to guarantee the company's bonds to the amount of $100,000. The site for the works will have to be purchased by the city, and will cost from $13,000 to $20,000.

Both Fort William and Port Arthur are making rapid progress as industrial centers. When the bills for changing them from towns to cities were before the Legislature a fortnight ago an attempt was made to unite them into one urban community, but neither appeared to be willing, and though physically inseparable they remain municipally unconnected—two interlocking, mutually independent cities. Their position at the Canadian head of the lakes gives them advantages that should make them very easy as to their industrial future. As the lake terminus of the Canadian Pacific, the Canadian Northern and the Grand Trunk Pacific railroads—all transcontinental lines—and as the gateway of all the lake traffic in and out of the flourishing prairie provinces, the mouth of the Kaministiquia seems destined to play a great part in the commerce and industry of this country. It is scarcely probable that the taxpaying citizens of Fort William and Port Arthur will much longer deem it necessary to offer municipal aid as an inducement to manufacturers to locate their works there.

Bounties.

Further public aid is almost certain to be forthcoming in the form of a Dominion bounty or premium on ships. Some time ago reference was made in this correspondence to the memorial presented to the Ottawa Government by the boards of trade and city councils of Halifax and Dartmouth, N. S. In that document were set forth the considerations in support of the concluding petition that a bounty of $6 per gross ton be paid on ships built in Canada. The argument was rather from the point of view of the Maritime Provinces than from that of the welfare of Canadian shipbuilding in general, though it did recognize that the conditions were unfavorable for the industry on all the navigable areas of the county.

This memorial was presented in November. Some time afterward it was followed by representations from British Columbia calling for like action. On the Pacific Coast a great maritime trade is being built up, and it is believed that the development of commerce with the Far East will enormously increase the Pacific Ocean traffic of this continent. The coasting trade is also swelling in volume, and the British Columbia people are convinced that their shipyards would become scenes of great activity if a bonus of $6 a ton were paid to the builders.

The Great Lakes Builders.

Last to lay their case before the Government were the shipbuilders of the Great Lakes—that is, the shipbuilders of Ontario Province. The chief Ontario companies are the Canadian Shipbuilding Company, with yards in Toronto and at Bridgeburg, on the Niagara River; the Polson Company, whose works are in Toronto; the Collingwood Shipbuilding Company, at Collingwood, and the Algoma Steel Company, at Sault Ste. Marie. Some weeks ago the Ontario companies presented their statement of the difficulties by which the industry is hampered, and concluded with a petition that an act be passed at the present session of Parliament authorizing the payment of cash aid by way of a premium on the following terms:

> Upon all steel or iron steam vessels, built at any port within the Dominion of Canada and launched between June 1, 1905, and June 1, 1915, at the rate of $6 per gross ton. The same premium to be paid upon any increase of the gross tonnage of any iron or steel steam vessel which may be effected by the enlargement of any such vessel at any shipyard or shipbuilding or repairing plant in Canada within the period named. The standard rules of measurement of the British Lloyds to be used for determining the gross tonnage of all vessels claiming a premium under the act, and the premium paid as soon as practicable after the launching of the vessel.

There is reasonable ground for believing that before the close of the session the Government will bring in a bill for the payment of a bounty on ships. It is understood that the Finance Minister is favorably inclined to the petitions. The present Government always recognized the importance of the transportation needs of the country. It completed the work of deepening the St. Lawrence canals. It has continued the construction of the Trent Valley Canal in Eastern Ontario. It has been very open-minded toward the Georgian Bay-Ottawa River canal project. A very sympathetic reply was given by the Prime Minister recently to a deputation that petitioned for the deepening of the Welland Canal to 20 ft. In its attitude toward railroad extension the Government has been similarly liberal. It is not unlikely that some measure of encouragement will be granted to the shipbuilders, who, besides being handicapped by unchecked British competition, and the exemption of certain foreign countries' vessels from the coasting law, have to pay duty on most of their raw materials.

C. A. C. J.

Customs Machinery Regulations.

WASHINGTON, D. C., March 19, 1907.—It has been definitely determined by the customs authorities to abandon the comprehensive amendments which it was proposed to make to the regulations regarding the appraisement of machinery and other bulky articles at the factories or other premises of the owner or importer. The plan, which has been under consideration for some months, involved the adoption of a number of restrictions upon the present practice, which would have embarrassed the owners of imported machinery besides adding materially to the cost of appraisement. The decision not to amend the regulations is due to the belief that reports to the effect that frauds have been perpetrated upon the Government in connection with this class of importations are unfounded and that there is no justification for rendering the regulations any more drastic.

Present Requirements.

The regulations now in force with regard to the appraisement of heavy machinery have been modified in several important particulars since they were originally promulgated in 1899 and as a result it is impossible to secure the exact text thereof as at present enforced. The principal requirements, however, can be briefly stated. The owners of imported machinery desiring to have it appraised after being set up at its destination may obtain a permit by application to the Treasury Department and upon the recommendation of the chief customs officer at the port of entry. Whenever consent is duly obtained to have the appraisement made away from the district of arrival, the importer must file with the collector a bond with approved sureties in which he shall stipulate that in consideration of the privileges accorded him he consents to regard such appraisement as in all respects valid and binding upon him and that he will not set up the fact of such a procedure as a defense against any liabilities or penalties which may accrue therefrom.

Under the original regulations the importer was required to make a deposit in advance to cover the estimated duty and expenses incurred by the appraising officer in visiting the place at which the machinery had been set up. Recently, however, the Department decided that, inasmuch as the bond given by the importer covered the duties and expenses incident to the collection thereof, a deposit was unnecessary. The original form of bond required the importer to give due notice in writing to the collector of customs at the port of entry within 30 days after the issuance of the delivery permit that the machinery had been set up at the place of destination in order that the official examination and appraisement might be completed, but experience soon demonstrated that this period was inadequate and the Department not long ago extended the time to 90 days.

Every invoice of machinery, whenever comprising two or more packages, is required to be referred to the examiner of machinery at the appraiser's office, who indicates thereon any particular package or packages which he desires to examine upon the wharf, the purpose being to ascertain the character of the contents of such packages and their general conformity with the specifications on the invoice. The machinery may then be forwarded to its destination, set up, inspected and appraised and upon the payment by the importer of all duties and expenses the special bond provided for by the regulations is cancelled. In the event that the importer refuses to furnish the special bond the importation will be held subject to examination and appraisement at the appraiser's stores.

Alleged Irregularities.

From time to time reports have reached the Department that spare parts, auxiliaries, etc., imported with machinery, have escaped the payment of duty as the result of the opportunities presented by the special regulations to withhold them from examination at the places of destination.. The invoices frequently do not contain specifications regarding spare parts, etc. and, unless their presence is detected by the appraiser in the packages selected for examination at the appraiser's stores, they are likely to be overlooked if not presented for examination when the machinery is finally set up. To prevent such evasions the Department has had in contemplation an amendment to the regulations requiring an appraising officer or inspector to accompany the machinery to its destination, witness the opening of all cases and remain at the plant until the machinery is ready for final appraisement. It is, of course, possible that such irregularities have occurred, but after due consideration the Department does not feel justified in imposing upon importers so costly a requirement in view of the lack of evidence that any real abuse in this regard exists.

W. L. C.

The Town of Republic.

A recent issue of the Connellsville *Courier* contained an account of the coke operations of the Republic Iron & Steel Company and other interests near the new town of Republic, in Redstone Township, Fayette County, Pa., from which the following is taken:

One of the greatest centers of industrial development in the State will be the town of Republic, where in a radius of about 1 mile six coke companies have started development, which includes the erection of 3400 ovens and means the expenditure of millions of dollars. The transformation has been a wonderful one, for two years ago when the Republic Iron & Steel Company started to build its plant the only residence there was a farmhouse which is still standing, but is now surrounded by many houses which are the homes of coke workers. The building of 3400 coke ovens will mean a town of at least 5000 people. The coming spring will witness the pushing of work by all the companies who have projected developments there.

Republic is on the Monongahela Railroad, between New Salem and Merrittstown and about 4 miles west of New Salem and only about 5 miles from Brownsville. The 3400 ovens that will be within a radius of about a mile with Republic as the center are: Tower Hill-Connellsville, 1000; Thompson-Connellsville, 900; Orient, 480; Brier Hill, 470; Republic, 400, and Uniontown Connellsville, 150.

Some idea of the capital necessary for this great development around Republic may be gained from the fact that the different coke companies paid from $1400 to $1600 per acre for their coal and that on the average each oven represents a cost of $1000, making $3,400,000 for the building of 3400 ovens. In addition to this, shafts have to be sunk to an average depth of 500 or 600 ft., at great expense, and all the works will be equipped with electrical machinery and have patent coke drawers. Each of the works also has its own separate siding to the Monongahela Railroad. The actual cost of the coal before any development was started was up in the millions, and it is thought that $10,000,000 is a very conservative estimate.

To transport the product of these 3400 ovens will require on the average 340 cars per day, each car with a capacity of 25 tons. This will make a movement of 8500 tons of coke per day out of the region from the six plants of which Republic will be the center.

At the present time over 8000 new ovens are projected in the entire coke region, and 75 per cent. of these are on the Monongahela Railroad. These 8000 ovens are mostly being built by new coke firms, but there are a number of additional ovens being constructed by old companies. All the companies building new ovens have their plants located in Fayette County. The year 1907 will witness the largest production of coke in the world's history.

Coal operators in the Hocking Valley, Ohio, issued a new price-list March 14, showing a heavy reduction in all grades of coal. Domestic lump is reduced from $2 to $1.50 a ton at the mines, three-quarters screened lump from $1.90 to $1.35; run of mine from $1.65 to $1.15, domestic nut from $1.50 to $1.05, pea from $1.35 to 95 cents, nut and slack from $1.10 to 75 cents, coarse slack from 85 to 55 cents. Other reductions are expected, as the trade will be dull until navigation opens on the lakes about April 15.

Mexican Railroad and Business Notes.

DURANGO, MEXICO, March 13, 1907.—The approach of the racing season, when the owners of great haciendas and small ranchers alike are preparing for activity in the fields, finds the country enjoying a gratifying measure of prosperity consequent upon the brisk inflow of foreign capital for investment, and the arrival of ever-increasing parties of tourists. The railroads are still heavily taxed, both in their freight and passenger departments. Orders for locomotives and freight cars are being continually placed by the old established lines, as well as by those of more recent construction, which are opening up new territory, and from time to time extending their operating mileage. Since its opening for through traffic the first day of the year, the National Tehuantepec Railway has been kept very busy. The work of unloading vessels at Puerto Mexico (Coatzacoalcos) and Salina Cruez has proceeded smoothly and quickly, and the transfer of merchandise from one port to the others across the isthmus and its reshipment to its destination have gone on with regularity and without hitch. Large imports by rail of mining machinery are noted. Activity in this line—Mexico's oldest industry—is well maintained.

Railroad Concessions and Construction.

It is reported in the Mexican press that the Rock Island Railway Company, which owns the El Paso & Southwestern, running from El Paso to Benson, Ariz., with a branch to Nacozari, Sonora, intends to extend the line to Guaymas, and possibly to Mazatlan.

The projected line from Durango to Gutierrez, with which the name of G. C. Palmer of Zacatecas has been mentioned, is now said to have the support of the Guggenheim interests. Funds for the construction are stated to have been secured, and actual work at grading is prophesied for the near future. The important extension of the Mexican Central to the Pacific port of Manzanillo is expected to be completed during the current year.

A circular has been issued by the management of the Cananea, Yaqui River & Pacific Railway Company (Southern Pacific) announcing the opening of the line to general traffic from Corral, south to Valderrain, and from Corral, north to Buena Vista.

The Kansas City, Mexico & Orient is rapidly pushing forward construction work in the State of Chihuahua. The road is now in operation east from Chihuahua to a point 120 km. distant, and is graded to the Conchos River, 150 km. Freight is also being accepted by the road west of the same city as far as Aguatos, 320 km. distant, and contracts have been let for the construction of 100 km. additional.

The International is reported as being about to lay a second track between Monclova and Monterey to enable the road to transport its rapidly increasing volume of coal and ore traffic to better advantage.

A mining branch line of 8 km. is in process of construction to connect the mine Cigarrero with the Parral branch of the Mexican Central Railway at Baca station.

Two other short lines of railroad are in course of construction and will be completed at an early date. One of these is a spur of 10 km. from the station of San Pedro de Campo to the mines of the American Smelters & Securities Company, the point of connection being on the Coahuila & Zacatecas Railway; the other is a line of about 20 miles in length, running from San Tablo Zimatlan, in the State of Oaxaca, to Taviche, a mining district which the road will greatly benefit.

Industrial Notes.

Statistics covering Mexico's exports during the first five months of the current fiscal year reveal the following facts: Total value, in Mexican currency, $96,141,669.80; of this total gold in all its forms to the value of $10,466,163.61 is included; silver, $39,544,430.47; other mineral products as shown in the following table:

Antimony	$577,124.00
Copper	11,685,615.00
Plombagina	37,420.00
Lead	1,615,528.56
Zinc	569,303.12

Several of the railroad companies have recently placed heavy orders in the United States, or are about to place them, for locomotives and other rolling stock, all for delivery as early as possible. Among the roads thus ordering are the Mexican (Vera Cruz), Kansas City, Mexico & Orient, Rio Grande, Sierra Madre & Pacific and the Sierra Madre Land & Lumber Company.

Steel ties are being substituted for wooden ones upon the lines of the Mexico Electric Tramways Company, Limited, of the city of Mexico. The company placed an order for a large number with the United States Steel Products Export Company some time ago.

A rather ambiguous report is published in the local press, the gist of which is that "a New York firm" has had representatives in this country looking for a site whereon to establish "a tin factory." J. J. D.

The Boston Automobile and Power Boat Show.

The Boston Automobile and Power Boat Show, in Mechanics' Building, Boston, last week, was the largest ever held in Boston and compared favorably with anything of the sort ever seen in that or other cities. In addition to the great number of companies showing automobiles and motor boats there was a great display of appliances, mechanisms and accessories for automobiles and motor boats and a very interesting line of machinery and tools.

The Chandler & Farquhar Company, Boston, had the only large exhibit of machinery and other tools and specialties, the companies represented in this exhibit being the Norton Company, Worcester, Mass., grinding wheels made of alundum; Norton Grinding Company, Worcester, cylindrical grinding; Chandler Planer Company, Ayer, Mass., demonstration of high speed planer; Coates Clipper Company, Worcester, applications of flexible shafting; Cochrane-Bly Company, Rochester, N. Y., demonstration of cold saw cutting off machines; E. F. Reece Company, Greenfield, Mass., taps, dies and screw plates; S. W. Card Mfg. Company, Mansfield, Mass., taps and dies; Hart Mfg. Company, duplex line of taps and dies; Lunkenheimer Mfg. Company, Cincinnati, line of brass goods; Mayer & Co., Philadelphia, gold medal files and rasps; Franklin Moore Company, Winsted, Conn., Acme hoists; Coes Wrench Company, Worcester, Mass., screw wrenches; Morse Twist Drill & Machine Company, New Bedford, Mass., twist drills; Brown & Sharpe Mfg. Company, Providence, R. I., machinists' tools; Bullard Automatic Wrench Company, Providence, R. I., automatic wrenches; L. A. Starrett Company, Athol, Mass., machinists' small tools; Billings & Spencer Company, Hartford, Conn., wrenches and other small tools; Standard Mfg. Company, Bridgeport, Conn., demonstration of automatic gear cutting machine; National Separator & Machine Company, Concord, N. H., Baker turret drill demonstration; C. G. Allen Company, Barre, Mass., high speed drill. Other exhibits were those of the Jacobs Chuck Mfg. Company, Hartford, Conn., chucks; Whitney Mfg. Company, Hartford, Conn., chains; Worcester Pressed Steel Company, Worcester, pressed steel specialties; Manufacturing Equipment & Engineering Company, Boston, shop wash basins and lockers; Progressive Mfg. Company, Torrington, Conn., hardware specialties; A. S. Morss Company, Boston, marine hardware; the Fairbanks Company, Boston, specialties; Cutter, Wood & Stevens Company, Boston, hardware.

Great Britain is adding to its navy the Indomitable, the first of a new class of armored cruisers, which was launched on the Clyde March 16. This cruiser has a displacement of 17,250 tons and is 530 ft. long, exceeding the older armored cruisers by 50 ft. It is fitted with turbine engines and expected to attain a speed of 25 knots an hour. Its cost is approximately $8,720,000. The German Government is reported to be making arrangements to build a still larger armored cruiser, whose displacement will be 19,200 tons. It will likewise be fitted with turbines, and is to develop a speed of 25 knots. Its cost is placed at $6,570,000.

Trade Publications.

Power Plant Machinery.—Charles E. Dustin & Co., 11 Broadway, New York. Catalogue. Contains a list of electrical and steam machinery for central stations, street railroads and isolated plants. Particularly handy to prospective purchasers, since it includes a tabulated and classified announcement of machinery ready for early delivery. An excellent feature of the catalogue is an illustration of the company's plant and storehouse at Jersey City and a map showing how to get there from nearby points.

Cupola Linings.—Harbison-Walker Refractories Company, Farmer's Bank Building, Pittsburgh, Pa. Pamphlet. Title, "A Little Talk on Brick for Cupola Linings." Explains the composition of the fire brick cupola linings manufactured by this company, gives reasons why they should be used, some pointers on bricks and bricklaying to get the best results, and is generally valuable, particularly to foundry superintendents for the helpful suggestions it contains. It also recounts an interesting experiment comparing various makes of fire brick and a reproduction from a photograph shows how all but the company's product swelled when they were subjected to a heat test in a kiln. The pamphlet concludes with a list and illustrations of some of the regular shapes carried in stock.

Cement Making Machinery.—Power & Mining Machinery Company, Milwaukee, Wis. Catalogue No. 7. Size 6 x 9 in.; pages 86. Contains information relative to processes and preparation of material in the manufacture of cement, and describes a line of machinery designed for the equipment of cement making plants. This includes crushers, conveyors, screens, mixing mills, rotary driers, rotary kilns, &c., together with the necessary power producing appliances and machinery.

Crucibles.—Their Care and Use. Joseph Dixon Crucible Company, Jersey City, N. J. Booklet with the foregoing title. Size 6 x 9 in.; pages 40. Written by John A. Walker, vice-president, treasurer and general manager of the company, for the purpose of informing the users of crucibles as to their nature and characteristics, and giving suggestions as to their care and handling, to increase their efficiency and greatly prolong their period of usefulness. It discusses such points as why crucibles are made of graphite and preferably flake graphite, how to anneal them, how to place the metals in the crucibles and the crucibles in the fire, what kind of tongs to use and how to use them, and what effect different fuels have on crucibles. Other useful information of a more general character is included, such as the composition of common alloys; freezing, fusing and boiling points; specific gravities of various metals; metric tables; comparative value of fuels, &c.

Motors and Blowers.—Emerson Electric Mfg. Company, St. Louis, Mo. Bulletins Nos. 3205, 3206, superseding 3204, and 3303, superseding 3302. These deal respectively with bipolar ventilated motors for direct current, of the types 412-DA and 412-DB, ranging in capacity from 1-16 to ⅛ hp.; bipolar inclosed motors for direct current of the types 412 EA-EB and 422 EA-EB, in capacities of from 1-20 to ⅛ hp., and direct connected volume blowers for direct and alternating current.

Graphite.—Joseph Dixon Crucible Company, Jersey City, N. J. Booklet entitled "Air Compressor Lubrication." Points out the advantages gained by using Dixon's flake graphite, which provides a simple, direct and effective remedy for nearly every lubrication trouble encountered in air compression. Descriptive matter is given concerning graphite with oil and with soapsuds, graphite lubrication for rock drills, and also abstracts from various engineering journals on the subject.

Crushing Rolls.—Sturtevant Mill Company, Boston, Mass. Pamphlet. Pertains to Sturtevant crushing rolls for pulverizing hard rock, &c. Illustrations show the machines complete and with case and feeder removed, and those equipped with wet and automatic feeders.

Air Brake Equipments.—Westinghouse Traction Brake Company, Pittsburgh, Pa. Bulletin T-2001. This supersedes the issue of July, 1904, and is devoted to the Westinghouse straight-air brake equipments, which may be installed with motor driven or axle driven compressors, or with storage reservoirs, the operation being independent of the source of air supply. These air brake equipments are only advocated for cars which operate singly.

Smelting Furnaces.—Allis-Chalmers Company, Milwaukee, Wis. Bulletins. No. 1417 gives an illustrated description of round and rectangular water jacketed lead and copper furnaces and their accessories, such as water jackets for all types of furnaces; forehearths; settlers, slag pots; copper bullion molds; slag cars; ore charging scales; barrows; scoop cars; bottom, side and end dump cars; blowers; blast valves; motors, and generators. No. 1506 pertains to electrically driven hoists for mining work. The parts of the hoists are each dealt with separately, and tables of capacities and dimensions of both single and double drum hoists are given.

Machine Tools.—Gisholt Machine Company, Madison, Wis., Loose leaves for catalogue insertion. Pages 49 and 50 deal with improved adaptations of motor drive to tools, illustrations being shown of one for a horizontal boring and drilling machine, and one for a turret lathe. Pages 51 and 52 describe and illustrate the first and second operations in finishing armature spiders on Gisholt lathes. Pages 53 and 54 refer to the Warren Works of the company, Warren, Pa., formerly the American Turret Lathe Mfg. Company. Pages 61 and 62 show first and second operations in finishing flywheels on the Gisholt lathe. Pages 63 and 64 refer to Gisholt lathes in some leading shops. Pages 65 and 66 deal with the adaptability of Gisholt big bore lathes to both bar and chucking work.

Machinery.—Titusville Iron Company, Titusville, Pa. Catalogue. Size 6½ x 9¾ in.; pages 60. Illustrates and describes the company's line of gas and gasoline engines, pumping powers, pipe cutters, valves for fire and steam stills, blowers, tank cars, portable engines, boilers, grates and grate bars, smoke connections and stacks, tanks and stills. A complete index is appended.

Geared Locomotives.—Climax Mfg. Company, Corry, Pa. Catalogue, size 9 x 6 in.; pages, 48. Illustrates and describes the construction of the Climax patent geared locomotives, horizontal and upright styles. Several illustrations show them operating under difficult conditions. The company's logging cars, which are made for any gauge track, and with and without springs, are also dealt with. Several pages of weights, estimates of cost of one mile of track with various weights of steel rails, cross ties per mile, miscellaneous information, &c., are appended.

Drilling and Milling Machines.—W. B. Knight Machinery Company, 2019 Lucas avenue, St. Louis, Mo. Circular. Gives an illustrated description of the Knight drilling and milling machine, described in *The Iron Age* March 7, 1907, and the Knight drill press. The first is a machine combining all of the features of the drill press and is, in addition, a vertical milling machine, capable of doing a large variety of light work.

Hot Air Engines.—W. H. Smith Mfg. Company, 6 Lock street, Buffalo, N. Y. Pamphlet and circular. The first describes the Essex hot air engine and specialties. The motors are suitable for driving store window displays, laboratory apparatus, model machinery, peanut and coffee roasters, fans, toys, &c. The circular refers to the Essex hot air vertical engine, which is a new model, water cooled, and is especially suited for light powers.

Chain Hoists.—Chisholm & Moore Mfg. Company, Cleveland, Ohio. Catalogue. Size, 6 x 9 in.; pages, 35. Gives illustrations and specifications of the Cyclone high speed chain hoist, the Moore antifriction chain hoist with recently improved brake, direct differential pulley blocks, the Standard screw chain hoist, the Moore hand hoist with lock brake, hand power traveling cranes, and trolley hoists particularly adapted for locations where there is little headroom. An illustrated description of this hoist was given in *The Iron Age* March 7, 1907. The catalogue further shows geared and plain yoke trolleys and hoists of various forms, and antifriction baggage car door hangers, and a malleable iron tee rail brace.

Pumping Machinery.—Wilson-Snyder Mfg. Company, Pittsburgh, Pa. Catalogue. Size, 9½ x 6½ in.; pages, 144. Cloth binding. This is the company's complete catalogue of pumping machinery for every purpose. This includes duplex steam pumps of a wide range of sizes, for various uses; compound duplex pumps and pumping engines, made in very large sizes for water works; hydraulic high pressure pumps, duplex pattern, of a wide range of sizes and also made compound; single direct acting pumps; automatic feed pumps and receivers; single cylinder air pumps; direct acting air compressors; vertical duplex pumping engines; duplex air compressors; duplex power pumps, vertical and horizontal patterns; independent air pumps and jet condensers; vacuum pumps; high duty pumping engines, and miscellaneous specialties, including steam separators, steam regulating valves for pumps and air compressors. The catalogue finally concludes with useful information and tables of value to those engaged in that branch of engineering that has to do with pumps and compressors.

Water Cooling Towers.—De La Vergne Machine Company, 138th street, New York. Circular. Describes the Klein water cooling tower for condensing purposes, which, it is stated, will cool the water to some 5 to 15 degrees below the temperature of the atmosphere.

Gas Engines.—John Reid Gas Engine Company, Oil City, Pa. Catalogue. Size 6 x 9 in.; pages 32. Deals with the Reid gas engines, which are built in sizes from 6 to 40 hp., and so arranged that gasoline can be used when necessary. One and two eccentric powers, oil refining receiving box and manifold, oil burners and burner steam and air connections are also included.

Lava.—American Lava Company, Chattanooga, Tenn. Booklet. New edition on the subject, "Lava for Mechanical and Electrical Purposes." Concerns the nature and physical, mechanical and electrical properties of lava, the material so commonly used for making gas tips. Since the issue of the first edition, two years ago, the company has perfected a process of pressing the ground material when mixed with a suitable binder into various forms that were formerly almost impossible to manufacture by the old process of machining. It may, however, be machined like the solid natural material (talc), and generally exhibits very nearly the same properties. The illustrations show a few of the many solid and composition lava shapes manufactured for mechanical uses—principally where great heat must be withstood, or electrical uses where the insulating capacity is of advantage.

The Coming Supply and Machinery Meetings.

Preparations for the simultaneous conventions and joint conferences of the American Supply and Machinery Manufacturers' Association, the National Supply and Machinery Dealers' Association and the Southern Supply and Machinery Dealers' Association, to be held at the Hotel Sinton, Cincinnati, Ohio, May 8 to 10, are progressing in energetic fashion. A large gathering of supply and machinery manufacturers and merchants from all sections of the country is assured. It is also certain that all who travel to Cincinnati to attend these meetings will be amply repaid for their time and labor, as the programme, as tentatively made up, shows that the officers of the three organizations are planning to make this meeting a memorable one. The programme, which was arranged at a special meeting of the executive committees of the three associations held in Cincinnati, provides that practically the entire time of the three days' sessions be occupied with hard work.

Those in attendance at the Cincinnati meeting were: American Supply and Machinery Manufacturers' Association—Samuel L. Moyer, the Lunkenheimer Company, Cincinnati, Ohio; S. P. Browning, Ohio Valley Pulley Works, Maysville, Ky.; D. M. Montgomery, La Belle Iron Works, Steubenville, Ohio; F. D. Mitchell, secretary-treasurer, New York. Southern Supply and Machinery Dealers' Association—J. A. Reichman, Reichman-Crosby Company, Memphis, Tenn.; J. G. Christopher, John G. Christopher, Jacksonville, Fla.; S. A. Smith, Smith-Courtney Company, Richmond, Va.; J. C. Miller, Miller Supply Company, Huntington, W. Va.; S. M. Price, S. M. Price Machinery Company, Norfolk, Va. National Supply and Machinery Dealers' Association—George Puchta, Queen City Supply Company, Cincinnati, Ohio; W. M. Pattison, Pattison Supply Company, Cleveland, Ohio; A. T. Anderson, secretary-treasurer, Cleveland, Ohio.

It was arranged that the opening session on Wednesday morning, May 8, shall be the only "open" meeting. The presidents of the three associations will be in charge. After the usual opening ceremonies and address of welcome by the Mayor of Cincinnati, Presidents Strong, Reichman and Moyer will deliver addresses. It is understood that these addresses will be on the aims and objects of the associations and the difficulties encountered in carrying on their work with suggestions as to means of overcoming these obstacles. It has been arranged that the speakers confer with one another in the preparation of their addresses so as to avoid duplication. A very pleasant feature of Wednesday morning's programme will be an address by T. James Fernley, secretary-treasurer of the National Hardware Association on the subject of "Association Work." This will be of special interest in view of Mr. Fernley's wide experience in the hardware trade where conditions have been quite similar to those existing in the supply and machinery trade. A report will be submitted by the chairman of the Joint Entertainment Committee, which is to be composed of three members selected from each organization. This session will close by the announcement of the personnel of a Conference Committee, which will also consist of three members of each association and to which all questions bearing upon the work of the three associations shall be referred during the convention, so that this committee may decide these questions and report their findings to the respective organizations.

On Wednesday afternoon there will be separate executive sessions of the three associations. The three bodies will then meet in joint executive session on Thursday morning, and will resume separate executive sessions in the afternoon. Friday will be similarly occupied.

A banquet has been arranged for Thursday evening. Among the topics to be discussed in joint session are: "Cash Discount," "Resale Price," "Cost of Doing Business" and "Relations Between Dealer and Manufacturer." Invitations will be extended to the officers of the following associations: American Hardware Manufacturers' Association, National Hardware Association, Southern Hardware Jobbers' Association.

It was the sense of the Cincinnati meeting that exhibits at the coming convention be discouraged.

A Co-operative and Profit Sharing Plan.

The Republic Belting & Supply Company, Cleveland, Ohio, has adopted a co-operative and profit sharing plan of conducting its business which, it is believed, will meet with much favor among its employees. Because of the large increase in its business and the necessity for more capital, this company recently decided to increase its capitalization from $100,000 to $300,000 and to sell $150,000 worth of 7 per cent. preferred accumulative stock at $85 per share. Of this $150,000 the company allotted $100,000 to its employees, allowing each to take as many shares as he was willing to pay $1.00 per month per share for. The factory employees, office force and salesmen have already subscribed for $101,000 of this stock.

In addition to selling its stock to employees, to make them interested in the profitable handling of the business, the company has decided to give a Christmas present to its employees every year, each employee getting as many per cent. of his salary as he has been years in the employ of the company. For example, under the profit-sharing plan an employee will be presented with 1 per cent. of his salary at the end of his first year, two per cent. for the second year, and so on up to six years. After an employee has been with the company six years he will get as a present each year 6 per cent. of his first year's salary. This profit-sharing plan applies to all employees except the salesmen, who are paid a commission on all sales, starting with the first dollar's worth sold. This commission ranges from ¼ to 2 per cent.

The company has adopted another plan of co-operation in addition to the financial interest, in order to provide the maximum efficiency of organization. Each sales department is managed by one person, who is chairman of a committee of three to five salesmen in his department. The general sales manager keeps in close touch with each department. The manufacturing end of the business is divided into four departments, with a foreman of each department as chairman of a committee of three to improve the quality of goods in his department or the efficiency in handling. All the foremen in time become members of a committee, of which the superintendent is chairman, with the idea of developing the factory organization as a whole. This committee meets once a week for general discussion. Any weak points that may develop are discussed at this meeting and steps are taken to rectify them. This plan imposes responsibility upon a great many and at the same time centers it in a few.

The Cement Industry in 1906.

The following statement, issued by the United States Geological Survey, shows the approximate production of hydraulic cements in the United States for the calendar year 1906: This statement is exact within a small fraction of 1 per cent. and is issued in advance of the annual report on the production of cement which is now being prepared in that bureau. The returns on which it is based are complete with the exception of those from four small plants.

The total production of all kinds of hydraulic cement in 1906, including Portland, natural rock and Puzzolan cements, was 50,027,321 barrels, valued at $54,015,713. Of this total 45,610,822 barrels were Portland cement, with a value of $51,240,652; 3,935,275 barrels were natural rock cement, with a value of $2,362,140, and 481,224 barrels were Puzzolan cement, valued at $412,921.

The total production of cement in 1905 was 40,894,308 barrels, valued at $36,012,189. Comparison of totals for 1905 and 1906 shows an increase in 1906 of 9,133,013 barrels in production and $18,003,524 in value.

The Refined Iron & Steel Company, Pittsburgh, Pa., is advising the trade that its rolling mills were not stopped last week on account of the high water which interfered with the operations of so many of the works in the Pittsburgh District. On the contrary the company states that it had the biggest week's production since it started in business.

NEWS OF THE WORKS.

Iron and Steel.

The Atlanta Steel Hoop Company, Atlanta, Ga., has changed its name to the Atlanta Steel Company, which more correctly expresses its line of products. Its manufactures are light bars and bands, rounds, squares, wire, wire nails, railroad spikes, light steel rails, cotton ties, &c.

It is understood that the Carpenter Steel Company will rebuild one of the large heating furnaces in its works at Reading, Pa. It will also erect a new one before very long.

The Turner-Fricke Company, Pittsburgh, has been granted a Pennsylvania charter to manufacture iron and steel. Henry C. Fricke of that city is the treasurer.

The New York State Steel Company, Buffalo, N. Y., expects to be making steel in its new open hearth furnace about April 1. The foundations for the company's blast furnace are rapidly going in, and practically all the important contracts for the furnace construction have been let. The furnace and stoves will be built by the Pennsylvania Engineering Works, New Castle, Pa. It is expected to have the furnace ready for blast about January 1, 1908.

The blast furnace of the Struthers Furnace Company, Struthers, Ohio, which was blown out for relining seven weeks ago, was blown in again this week. The furnace produces only basic iron. There is no truth in the report recently published in newspapers, to the effect that the company will soon begin to erect a 500-ton stack to replace the old one that has just been repaired.

General Machinery.

The Fox Machine Company, Grand Rapids, Mich., has received an order from the Milwaukee School of Trades for a No. 8 universal wood trimmer, which is said to be the largest and most complete machine made, and four of its bench type machines. Other recent orders include Allis-Chalmers Company, Milwaukee, Wis., 43 trimmers, 12 of the large full universal type and 31 of the bench machines; Stuyvesant High School, New York, four trimmers, one of universal type and three bench machines.

The American Spiral Pipe Works, Chicago, Ill., has taken over the entire business of the American Forged Steel Flange Company and is now fully equipped to make forged steel flanges and special forgings of every description.

The Ross Oscillating Pump Company, Los Angeles, Cal., recently incorporated with a capital stock of $1,000,000, has purchased a factory site worth $20,000, on which it will erect a $10,000 building, to be equipped with machinery costing $30,000 for the manufacture of the Ross oscillating pump, which is said to be the only valveless plunger pump on the market. It was decided to build a small factory at first in order that it could be quickly completed so that the company might begin manufacturing pumps as soon as possible to fill orders, of which it has enough to keep its plant running to full capacity well into the summer. As soon as this initial installation is completed the company will enlarge its manufacturing facilities, the intention being to build plants in Chicago, Pittsburgh and New York. Machinery for the plant has been purchased, but the company expects to be in the market for considerable more machinery in the near future. Andrew J. Ross is president and treasurer; James Cook, vice-president; Ernest W. Pratt, secretary and general manager. These officers with John A. Cusick and Will E. Ross constitute the Board of Directors.

The Camp Machine Company, Atlanta, Ga., is erecting a new brick building on Marietta street, 50 x 60 ft., two stories. The machinery of the old location will be transferred to the new building and several new machines will be installed. The plant is expected to be running by May 1, and orders are now on the books that will keep it in full operation for some time. The company intends to make the manufacture of special machines its principal work.

The General Drop Forge Company, Buffalo, N. Y., which was recently incorporated to take over the forge plant formerly operated by the General Railway Signal Company, will enlarge and improve the equipment. The recent statement in these columns that the company was organized to take care of the forging work of the Century Telephone Construction Company and the General Railway Signal Company is not entirely correct, as the company intends to do custom work, and any work done for either of these companies will be done the same as for any other customer. The incorporators are B. G. Hubbell, J. D. Pugh and C. H. Littell.

The Scranton & Co., New Haven, Conn., manufacturer of Scranton improved upright power hammers and other specialties, reports that it has recently obtained additional facilities to take care of its rapidly increasing business. It expects soon to have all orders delivered complete, and to have a stock from which further orders can be promptly shipped.

The Chester Forging & Engineering Company has been organized at Chester, Pa., by Joseph Messick, Jr., Samuel S. Tompkins and Henry Arnhold, to manufacture tools and machinery.

The International Steam Pump Company is building a three-story brick addition to one of the machine shops and two storehouses at its Buffalo plant, on Roberts avenue and the Pennsylvania Railroad.

National Boiler & Sheet Iron Works, the National Dry Kiln Company, proprietor, Indianapolis, Ind., has recently added a locomotive repair department in order to meet the increasing demands of its customers. This department will have all modern facilities for the quick repair of locomotives, &c.

The Wolfe Machine Company has been incorporated at Buffalo, N. Y., with a capital stock of $45,000, to take over the business of Arthur P. Wolfe, manufacturer of special metalware stamping machinery. The new company will continue the manufacture of special automatic machinery to specifications and designs, and die-presses, &c., for cans, boxes and stamped metal work; and will also treat sheet metal work with a newly patented process of coating. The directors are: C. R. Wycoff, Arthur P. Wolfe and John M. Satterfield.

Power Plant Equipment.

The Cherokee Power Company, Afton, I. T., has been incorporated with a capital stock of $1,100,000, for the purpose of putting in a power plant on the river near Afton.

The Deposit Electric Company, Deposit, N. Y., is considering the installing of a 300-kw. direct connected generator set, to run in connection with a 200-kw. machine, belted to water wheels.

The Common Council of Orange, N. J., will receive bids until March 25 for boilers, chimney, pumping main and ejectors, for the new pumping plant at the Chestnut street station.

The Wilmington Light & Power Company, Wilmington, Ill., has been incorporated with a capital stock of $15,000, and will reorganize and operate an electric plant at that place. The old plant is inadequate for present needs, and the new company has arranged to expend about $15,000 to renew its equipment. J. H. Ray is president, A. J. McIntyre treasurer and J. C. Thompson secretary.

The Mansfield, Ohio, plant of the Babcock & Wilcox Company has been dismantled and the machinery removed to Barberton, Ohio, to which place the employees have been transferred.

The location of a gas engine works in Sharon, Pa., now seems assured, and the location decided on is in the northern part of the city. Among those mentioned as stockholders in the company are George H. Boyd, president of the Thomas D. West Foundry Company, Sharpsville, and John Stevenson, Sharon. The company has purchased 17 acres of land on the Shenango River front, and railroad connection with the Lake Shore road will be made at once.

The central heating and power plant to be completed during the coming summer for the Capitol buildings at Washington, D. C., will contain 9000 hp. of water tube boilers. These boilers will be equipped with Foster superheaters, manufactured by the Power Specialty Company, New York. At the recent opening of bids on boiler, stoker and superheater equipment for this plant 22 of the tenders, including that of the successful bidder, offered the above superheater; the two remaining boiler companies bidding offered a bare tube type of superheater. Some of the recent business secured includes the following orders for Foster superheaters, aggregating many thousand horsepower, for installation in various types of water tube and fire tube boilers, many of which are repeat orders: Newnan Cotton Mills, Newnan, Ga.; Illinois Central Railway, Chicago; Tennessee Copper Company, Copper Hill, Tenn.; Canada Turpentine Company, Cross, Austin & Ireland Lumber Company, Old Dominion Copper Company, Chas. S. Tanner Company, Columbia Improvement Company, Tampa, Fla.; Bucyrus Company, Milwaukee; Philadelphia Electric Company.

Bids will be received to April 5, by the Board of County Commissioners of Marion County, meeting at Indianapolis, Ind., for new boilers, pumps, heater, &c., for the county power house, in that city.

Foundries.

The St. Louis Malleable Castings Company, St. Louis, Mo., is erecting new buildings which will increase its capacity 50 per cent., and will install a new 20-ton melting furnace and five new annealing ovens. There will be two new buildings erected, 60 x 320 ft. and 80 x 120 ft. respectively. All the new machinery required has been arranged for, the tumbling mills, &c., being constructed in the company's plant. The company reports a large amount of work on hand, the additional business being offered necessitating an increase in capacity.

Carroll Bros., Houghton, Mich., have placed their new steel casting plant in operation and are now ready to fill orders.

The Globe Malleable Iron Company, Syracuse, N. Y., maker of high grade charcoal iron castings, will spend $30,000 in doubling the size of its plant. There will be three one-story buildings erected, of reinforced concrete and steel, 80 x 160, 20 x 180 and 60 x 100 ft., respectively.

The Charlotte Pipe & Foundry Company, Charlotte, N. C., is erecting a new plant on a plot of 45 acres which it recently purchased near its old location. The buildings, which will be constructed of steel, corrugated iron and brick, will cover more than an acre of ground, and when completed will double the present capacity for the manufacture of cast iron soil pipe and fittings. The plant is expected to be completed in about 60

days. During the last year shipment of product was made to almost every State in the Union.

The old firm of Knott, Harker & Co., founders and machinists, Beaver Falls, Pa., has been incorporated as the Knott-Harker Company, with a paid in capital of $100,000, and will operate on the same lines as heretofore. Joseph Wilson is president; Joseph W. Knott, secretary and treasurer. Other owners are F. K. Brierly and Frank F. Brierly.

The Wetherill Finished Castings Company, Philadelphia, Pa., which has been reorganized and incorporated with $150,000 capital, has maintained a temporary plant for about three years in which it has conducted numerous experiments in making castings under its patented process. These have been successful, and it is said that the company casts under pressure metal at a much higher melting point than has ever heretofore been accomplished. These castings are adapted for automobile, marine and auto engine parts and numerous substitutes for brass. The success which the company has met with in the manufacture of its castings and the amount of business offered has necessitated the erection of a large plant, equipped with specially designed apparatus and machinery, which is expected to be in operation in the early part of the summer. S. P. Wetherill is president; E. H. Trotter, vice-president; J. P. Wetherill, Jr., secretary, and S. P. Wetherill, Jr., treasurer and general manager.

In addition to its present iron foundry, the Veite Foundry & Machine Company, Pittsburgh, has installed equipment to manufacture steel castings up to 2000 lb. in weight, on which prompt deliveries can be made. A 350-lb. air driven hammer and a double combination punch and shear have been installed. The machine shop has also been enlarged, an extension measuring 60 ft. x 100 ft. having recently been erected. The company has secured a contract from the American Bottle Company, Newark, Ohio, for 18 Seaman gas valves, which will be delivered in about two months.

The George A. Hogg Iron & Steel Foundry Company, Pittsburgh, builder of rolls and rolling mill machinery, has received an order from the Cambria Forge Company, Johnstown, Pa., for a No. 7 lever shear to cut 5 x 5-in. material; also an order from the National Supply Company, Toledo, Ohio, for a No. 6 shear to cut 4½ x 4½-in. material, and an order for a 60-in. roll lathe from the National Tube Company, Riverside Department, Wheeling, W. Va.

J. W. Van Meter has resigned as secretary of the Mitchell & Van Meter Company, Linfield, Pa., and has purchased a foundry plant at Eighth and Walnut streets, Reading, Pa., where he will engage in the manufacture of plumbers' iron goods, under the firm name of the Van Meter Foundry Company.

The Curtis & Co. Mfg. Company, St. Louis, Mo., is building a new department for the manufacture of steel castings, the first unit of which will consist of two cupolas and two converters with necessary buildings and equipment, to which later will be added open hearth furnaces. All the material and appliances have been purchased.

Motors and Small Engines.

The Buffalo Auto Truck & Motor Company has been incorporated at Buffalo, N. Y., for $150,000 capital stock, to manufacture auto trucks and gasoline motors for auto truck and marine use, under the patents of John Echert. The company has secured factory premises on Mississippi street, which will be extended and additional equipment provided.

Fires.

The foundry of the Williams Foundry & Machine Company, Akron, Ohio, was damaged $3000 by fire on March 12. It will be rebuilt at once.

One of the large buildings of the Utica Pipe Foundry Company's plant, Utica, N. Y., was damaged $25,000 by fire March 11.

Property in the Pittsburgh District was considerably damaged by flood and fire during the past week, including many manufacturing plants. It is said that the loss sustained by the various industries will amount to several million dollars. One plant of the American Sheet & Tin Plate Company was damaged about $25,000.

The wall paper factory of Janeway & Carpenter, New Brunswick, N. J., was destroyed by fire March 13, the loss being about $100,000.

The McGregor-Banwell Fence Company's plant at Walkerville, Ont., was destroyed by fire March 16, the loss being about $50,000.

The plant of the St. Paul Foundry Company, St. Paul, Minn., was damaged $10,000 by fire on March 10.

The plant of the Electric Porcelain Company, East Liverpool, Ohio, was destroyed by fire March 18, the loss being about $50,000.

The boiler works of Henry Goiner & Sons, Philadelphia, Pa., was damaged $20,000 by fire March 16.

Hardware.

The Hollinger Cutlery Company, Fremont, Ohio, has been incorporated with a capital of $10,000. The new company will take over the cutlery business that has been conducted by A. S. Hollinger & Sons, who have been engaged in the manufacture of butcher knives and other specialties. The incorporators of the company are A. S. Hollinger, J. L. Reineck, G. F. Hollinger and E. Hollinger.

The Pennington Metal Weather Strip Company, capitalized at $10,000, has been organized in Cleveland, Ohio, to manufacture the Pennington weather strip. It is the purpose to extend the business that has been in existence for some time. The incorporators are A. D. Pennington, F. W. Treadway, F. B. Ballon, James A. Ford and Benjamin P. Bole.

The David Maydole Hammer Company, Norwich, N. Y., will erect a new and larger forge room. This move is made in part to take care of the increased output of the plant and in part to place the valuable machinery of the forge room in fireproof quarters. The ground is now being broken for the foundations of a building that will be 60 x 180 ft. The work of construction will be handled in such a manner as not to interfere with the operation of the machinery in the forge room. In order to furnish the increased power which will be necessary the company will install one more boiler and will also put in an additional engine and dynamo of 150 hp. to furnish power for electrically driven machinery.

The Combination Jack Company has been incorporated at Worthington, Ind., with $10,000 capital stock, to manufacture jacks. The directors are Alonzo F. Wilson, Lillie Wilson and Frank Jean

The Crawfordsville Wire Bound Box Company has been incorporated at Crawfordsville, Ind., with $20,000 capital stock, to manufacture wire bound boxes, barrels, &c. The directors are Isaac C. Elston, Orpheus M. Gregg and Wm. P. Herron.

D. H. Potts, Lancaster, Pa., manufacturer of fan blowers, forges, drills, upsetters, &c., has recently installed a quantity of new and improved machinery and has added another building to his factory plant.

The International Silver Company is to make large additions to its factory at Norwich, Conn., known as Factory G. A new one-story building, 50 x 200 ft., will be erected, and an old two-story brick building, 50 x 100 ft., will be remodeled. A new Harris-Corliss 200-hp. steam engine and two 150-hp. Bigelow boilers will be installed, and a radial chimney, 110 ft. high, with 5-ft. flue, will be erected. These changes will increase the capacity of the plant 350 dozen table knives a day, making a total of 950 dozen.

Burns, Silver & Co., Bridgeport, Conn., manufacturers of furniture trimmings, railway specialties and brass goods, have purchased the entire business of the Feltoid Caster Company, Sudbury street, Boston, and will move the machinery to the Bridgeport factory, where they will establish a new department, Burns, Silver & Co. not having manufactured casters previously. The company states that it has a good deal of confidence in this felt wheel caster, because of its attractiveness to people having to do with hardwood floors and furniture on casters.

The Universal Wrench Company, Boston, has been incorporated in Massachusetts to put on the market a new wrench. The capital stock named is $30,000. William Dawson is president, Fred B. Wentworth treasurer and F. H. C. Reynolds, 60 State street, Boston, clerk The company states that its wrench is particularly adapted to automobile use, for the reason that it has but one handle to 10 heads of different sizes. It is not decided whether the company will manufacture the wrench or have it made by outside parties.

The business of Cobb & Drew, Plymouth, Mass., has been incorporated under Massachusetts laws as the Cobb & Drew Company. The capital stock is $100,000. The incorporators, who also constitute the Board of Directors, are Rosa A. Cole, H. I. Seymour, R. Holmes, J. W. Carleton and C. A. Bumpus. H. I. Seymour is president, R. Holmes treasurer and J. W. Carleton clerk. The officers of the corporation have been associated with the late Byron C. Quinby in the management of the business for many years. The company will continue to manufacture rivets, burrs, washers, tacks, nails, staples, double pointed tacks, spring cotters and spring keys, with the production of which the original firm has been so long identified.

The Briggs Mfg. Company, recently of Middletown, Conn., has purchased the old Pickering Governor Company shop at Portland, Conn., where increased facilities for manufacturing will be obtained. The Briggs Company manufactures wire goods and specialties, and something over a year ago established a department for the making of punching and forming dies, under the supervision of A. S. Pollard, formerly of the Stiles & Parker Press Company. The company is equipped to do cold swaging, light and heavy press work, screw machine and drop forge work.

The Johnson Mfg. Company, New Haven, Conn., has been incorporated in Connecticut, with capital stock of $8500, and plans to establish a factory at New Haven to manufacture sheet metal specialties, mostly press work. J. Willis Downs is president and treasurer, and Albert W. Johnson secretary.

The Squires Mfg. Company, 524 Board of Trade Building, Boston, has been organized to handle a new door hanger, which

will be manufactured for it by outside parties. Curtis A. Squires, Lyndonville, Vt., is the president, Charles G. Norris treasurer and Joseph W. McConnell clerk. The authorized capital stock is $50,000.

The Independent Cash Carrier Company, Springfield, Mass., has organized in Massachusetts to put on the market a tube cable cash carrier, which will be manufactured from parts made under contract. The authorized capital stock is $500,000. Edwin G. Rude is president, and Luman A. Brown, 71 Dartmouth street, Springfield, treasurer.

The American Nailless Horseshoe Company is a new Massachusetts corporation, with authorized capital stock of $100,000. The office is at 15 State street, room 100, Boston. Several offers of factory location for the company have been received, but no decision has been reached.

Glascock Bros. Mfg. Company, Muncie, Ind., manufacturer of hand cars and other vehicles for children, formerly operated by Chas. O. Glascock, John W. Glascock and Benj. D. Glascock as a copartnership, has been dissolved, owing to the death of Chas. O. Glascock. The surviving partners have sold the manufacturing plant, good will and patents to a corporation to be known as the Glascock Bros. Mfg. Company, with the following officers and directors: J. J. Dow, president and general manager; C. S. Davis, secretary and treasurer; A. L. Johnson, vice-president; W. E. Hitchcock, E. G. Clarke and L. S. Gauter. The company will at once commence the erection of additional buildings and install new machinery. The productive capacity will thus be materially increased. Quite a large foreign business in children's vehicles has been built up by the company, and a number of agencies have been established abroad. In fact, the foreign demand has, we understand, increased in about the same proportion as the domestic. One of the surviving brothers, John W. Glascock, will continue with the new company for the balance of the year.

The Fulton Machine & Vise Company, Lowville, N. Y., which was incorporated July 26, 1905, has, with the installation of considerable new and up to date machinery, become one of the best equipped machine shops of its size in northern New York. The company is making a specialty of vises, for which it is in receipt of many orders from all over this country, as well as from London, England. The company also reports inquiries from Sweden, France, Russia and Japan. In addition to the vise department the company has recently closed a contract to manufacture the H. & M. patented valves. These valves are made of steel and weigh from 200 to 800 lb. apiece. The valve has been manufactured in Vienna for the past six years, but for the American market it has seemed best to make the valves here and the company expects to see this department in a few years grow to large proportions. The valve is a safety appliance operating automatically in case of an accident, such as the explosion of a boiler or the bursting of a steam pipe. It is called for mostly where superheated or high pressure steam is used.

Miscellaneous.

The Gear Mfg. Company, Canton, Ohio, has been incorporated, with a capital stock of $200,000, to manufacture a new kind of street car gear, for which patents have been issued. The incorporators are P. L. McLain, Charles E. Lewis, Andrew Hollinger, Samuel W. Smith and William L. Day.

Tate, Jones & Co., Incorporated, Empire Building, Pittsburgh, has received a contract from the Metric Metal Works, Erie, Pa., for 10 oil burning brass melting furnaces, which are so constructed that coke can be used in case of failure of oil supply. This type of furnace has been in successful use for several years in the plant of the Ft. Wayne Electric Works, Ft. Wayne, Ind.

The Aluminum Company of America is erecting a building of a temporary character on the Hydraulic Canal Basin at Niagara Falls, N. Y., not far from its present plant, which it will equip for the manufacture of aluminum and where it will utilize the 3500 hp. of electrical power that formerly went to the Acker Process Company, whose works were recently destroyed by fire, the Acker Process Company having decided to defer for the present the rebuilding of its Niagara Falls plant.

The J. P. Devine Company, Buffalo, N. Y., manufacturer of vacuum drying and impregnating apparatus, has purchased a site at Ferry street, Sheridan avenue and the New York Central Belt Line tracks, having a frontage of 449 ft., upon which it will at once commence the construction of a new plant.

The Acme Tool & Truck Company, St. Louis, Mo., contemplates the erection of a new building, 160 x 380 ft., to be constructed of brick and stone.

The Fuller Brake Beam Company, recently incorporated, is to enlarge the plant at Picture Rocks, Pa. G. R. Van Alen of Northumberland is president, and P. H. Fuller, Picture Rocks, treasurer and manager.

The Driggs-Seabury Ordnance Company, Sharon, Pa., has begun the manufacture of automobile parts on a large scale.

The Continental Automobile Mfg. Company, New Haven, Conn., has been incorporated to manufacture the Continental car and has established a shop at 166-168 John street. The capital stock of the company is $100,000. C. A. Moeller, president of the Narragansett Brewing Company, is the president; C. S. Johnston of the C. S. Johnston Company is treasurer; R. L. Kautz, secretary, and F. J. Scholihorn, treasurer and general manager of the W. Scholihorn Company, New Haven, is the fourth director. The machine will be manufactured on an original pattern from parts made by other manufacturers, including a special motor of the company's own design.

A two-story brick factory for the manufacture of asbestos is to be erected on Fifty-fifth street, near Eleventh avenue, for Jacob Racich, who now has a plant at 525 West Fifty-fourth street, New York. The present manufacturing equipment will be moved to the new structure.

The business of Walker M. Levett, New York, has been incorporated as the Walker M. Levett Company, and the manufacture of brass, bronze and aluminum castings will be continued under the same management. Walker M. Levett is president and treasurer, and Samuel Campbell, secretary.

The Chapman Railway Patents Company, Colorado Springs, Colo., has been incorporated with a capital of $100,000, to manufacture the Chapman rapid recharging air brake device, the invention of R. E. Chapman. Plans are now being made for the erection of shops and foundry for the manufacture of this appliance.

The Pennsylvania Mineral Wool Company, Norristown, Pa., has completed the installation of an addition to its power plant and is now in a position to produce 10 tons of either rock or slag wool per day.

The National Lead Company, Allegheny, Pa., has purchased the sheet lead and lead pipe business of F. W. Gerdes & Brother of that city and will operate it.

The Commercial Club of Florence, Ala., has concluded a deal with B. B. Cohen, formerly of Sheffield, whereby the old plant of the Florence Pump & Lumber Company has been secured by Mr. Cohen, who will equip it for the manufacture of stoves. It is expected that the plant will be in operation by September 1.

The improvements which the Continental Car & Equipment Company, Louisville, Ky., is making to its plant includes the building of a new erecting shop, 75 x 150 ft., and an office building, 24 x 30 ft. No additional machinery will be purchased for the shop.

The Pressed Steel Sanitary Mfg. Company, Detroit, Mich., has incorporated to manufacture one-piece porcelain enameled steel bathtubs. Clarence H. Booth is general manager.

The Jones & Laughlin Steel Company Exonerated.—At a coroner's inquest, held in Pittsburgh last week, evidence was submitted regarding the explosion at No. 2 Eliza furnace of the Jones & Laughlin Steel Company at Pittsburgh, on January 14, when 14 men were killed, and a verdict was rendered to the effect that the death resulted from "accidental explosion, as the furnace was in good working order." With the exception of several foreigners, the employees at the furnace said it had been working all day before the accident as usual. Great importance was placed by the jury on the testimony of expert furnacemen, who examined the furnace after the explosion and pronounced it as strong as it is possible to build such structures. The experts included the following: W. C. Coffin and R. C. McKean of the Riter-Conley Mfg. Company, J. R. Speer of the Midland Steel Company, Hay Walker of the Harbison-Walker Company, James Scott, general superintendent of the Lucy and Isabella furnaces of the Carnegie Steel Company; Michael Hillen of the Edgar Thomson Works, L. L. Arnold of the Clairton plant of the Carnegie Steel Company and W. H. Lewis of the Aliquippa plant of the Jones & Laughlin Steel Company.

The New England Foundrymen's Association.—This society took up the question of shortages in shipments of pig iron and coke at its monthly meeting, held at the Exchange Club, Boston, March 13, and appointed a committee to look into this and similar matters, consisting of J. L. Anthony, Weir Stove Company, Taunton, Mass.; Walter B. Snow, B. F. Sturtevant Company, Hyde Park; Lewis E. Harper, Becker-Brainard Milling Machine Company, Hyde Park; Henry W. Arnold, American Tool & Machine Company, Boston, and William J. Breen, Hugh W. Adams & Son, Boston. The specific duties of the committee are to "investigate shipping conditions, particularly in regard to obtaining redress on shortages in shipments of pig iron and coke." President W. H. Bense presided at the meeting. After the usual dinner Lewis E. Harper, Becker-Brainard Milling Machine Company, gave a most interesting and instructive talk on "The Practical Operation of the Molding Machine," illustrated by stereopticon views.

The Iron and Metal Trades

The flood in the Pittsburgh District has led to a serious loss in production, both on the part of blast furnaces and of steel works and rolling mills. The impression, however, that all of the plants were affected is not quite correct. Thus operations were not affected at the Duquesne and Donora works of the Steel Corporation, while Homestead kept running, with the exception of two individual mills, and Clairton, with the exception of one mill. The disaster, however, has emphasized the shortage of Pig Iron.

During the past week the Steel Corporation has purchased 9000 tons of Bessemer Pig for April delivery from Valley furnaces, on the basis of $22 at furnace, and has secured options from the same group of furnaces on 15,000 tons for May delivery. Another furnace interest has sold 36,000 tons of Bessemer Pig to the Cambria Company for delivery during April, May and June at the average monthly market price.

There is very little doing in Basic Pig. In the East the Steel makers are supplied for the second quarter and show little disposition to touch the second half, because they are finding it difficult to sell Steel Billets at satisfactory prices. Besides, the Eastern Plate mills are now back to the condition that larger sales of Plates must be made at Pittsburgh base prices, the premiums having disappeared.

At times an urgent demand for spot Foundry Iron crops up, for which premiums are obtained. It leads to such curious occurrences as the shipment of Middlesbrough Iron from Philadelphia to Chicago. The buyer, who took about 1000 tons, asked that it be shipped by five different routes.

At least a part of the 12,000 tons required for a leading electrical plant, for delivery during the second half, has been closed, and it is probable that all of it will go to the Buffalo furnaces. A large foundry interest has purchased close to 10,000 tons for early delivery, from Northern furnaces, and from the South comes the report that a large melter has taken lots from different companies in the Birmingham District aggregating 33,000 tons. It is estimated that 80,000 tons of Iron was sold in the district during the past two weeks.

Satisfactory reports come from the Finished Iron and Steel trade, particularly so far as the lighter lines are concerned. The heavy movement in Wire products continues, and the Pipe mills have been placed in an even more embarrassing position as to deliveries by the interruption of work caused by the floods. The Bar mills are rushed with work. Among the contracts recently taken by the Steel Corporation is about 5300 tons for Panama.

A little more competition is developing among Bridge builders. The largest contract placed during the week is about 6000 tons for the Illinois Central. San Francisco records another transaction, this time for 1500 tons for the Spreckels Building.

There are not many new Rail sales of consequence. The largest this week is 9000 tons for the Texas Traction Company.

The Coke market is easing off, and Standard Connellsville can now be bought at $2.85 at oven. Ore in the East, too, is weaker.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Mar.20, 1907.	Mar.13, 1907.	Feb.20, 1907.	Mar.21, 1906.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	*$25.25*	$25.25	$25.50	$18.25
Foundry No. 2, Southern, Cincinnati	26.00	26.00	26.00	16.50
Foundry No. 2, Local, Chicago	**26.00**	25.50	25.50	19.00
Bessemer, Pittsburgh	22.85	22.85	22.85	**18.35**
Gray Forge, Pittsburgh	*21.75*	21.85	21.85	16.85
Lake Superior Charcoal, Chicago	*26.50*	27.00	27.00	19.75
BILLETS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	*29.00*	29.00	29.50	26.75
Forging Billets, Pittsburgh	36.00	36.00	36.00	32.00
Open Hearth Billets, Phila	33.00	33.00	33.00	29.00
Wire Rods, Pittsburgh	37.00	37.00	37.00	34.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	**28.00**
OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago	18.00	18.00	18.00	13.50
Steel Rails, Melting, Phila	*19.25*	19.25	19.50	16.25
Iron Rails, Chicago	25.00	25.00	25.00	20.50
Iron Rails, Philadelphia	*27.00*	27.00	27.50	21.00
Car Wheels, Chicago	**24.00**	24.00	23.00	18.00
Car Wheels, Philadelphia	**24.00**	23.25	23.25	16.75
Heavy Steel Scrap, Pittsburgh	18.00	18.00	18.00	14.50
Heavy Steel Scrap, Chicago	**16.00**	16.00	15.50	13.00
Heavy Steel Scrap, Philadelphia	*18.75*	19.00	19.00	15.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents
Refined Iron Bars, Philadelphia	1.93½	1.93½	1.93½	1.73½
Common Iron Bars, Chicago	1.81½	1.81½	1.81½	1.71½
Common Iron Bars, Pittsburgh	1.80	1.80	1.80	1.65
Steel Bars, Tidewater, New York	1.74½	1.74½	1.74½	1.64½
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.50
Tank Plates, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.60
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.84½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.84½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	**1.90**	1.90	1.85	1.57½
Skelp, Sheared Steel, Pittsburgh	**2.00**	2.00	1.95	1.60
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.50	2.50	2.50	2.25
Wire Nails, Pittsburgh	2.00	2.00	2.00	1.85
Cut Nails, Pittsburgh	2.05	2.05	2.05	1.80
Barb Wire, Galv., Pittsburgh	2.45	2.45	2.45	2.30
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	**25.50**	25.50	25.12½	18.62½
Spelter, New York	*6.95*	6.95	7.00	6.15
Spelter, St. Louis	6.80	6.80	6.80	6.12½
Lead, New York	6.30	6.35	6.30	5.35
Lead, St. Louis	6.10	6.10	6.10	5.27½
Tin, New York	*40.65*	42.25	41.85	37.12½
Antimony, Hallett, New York	*23.00*	23.50	25.00	16.50
Nickel, New York	45.00	45.00	45.00	40.00
Tin Plate, 100 lb., New York	$4.09	$4.09	$4.09	$3.69

Chicago.

FISHER BUILDING, March 20, 1907.—(*By Telegraph.*)

If the foundations underlying the towering structure of existing commercial and industrial prosperity were of uncertain strength and stability, or if the superstructure itself were weakly braced by false work of speculative construction, then the whole vast fabric composed of commodity values would surely have suffered severe damage from the storm of panic that last week broke upon and wrought havoc in the security market. How firmly rooted is the general confidence of the country in the healthfulness of present trade conditions is well shown by the fact that the excitement and commotion occasioned by this panic scarcely caused a tremor to other than speculative interests. Up to date no cancellations traceable to this cause have been reported, and the market is not only unaffected, but, if anything, shows a stronger tone. Floods at Pittsburgh and along the Ohio River have caused the shutdown of some of the busiest mills, the result of which will be to delay still further shipment of many long overdue orders. Besides the mills of the National Tube Company, several Sheet mills were compelled to suspend operations, which will naturally make greater the scarcity already existing in these products. Specifications in more plentiful supply are bringing the output of Structural mills close up to capacity. Although contracting for material to cover requirements beyond July 1 has not fairly begun, a good volume of current business in Bars is being booked by the mills and prices are well maintained. There is no practical change in the waiting condition of the Pig Iron market. Business is still mainly confined to spot shipment and deliveries through the second quarter. There

are some inquiries in the market for second half requirements, but very few sales of relatively small tonnage have resulted from them. Furnace A of the Iroquois Iron Company, after a remarkable run of over seven years, during which time it was out of blast but 68 days and then for lack of Coke, has been shut down for relining.

Pig Iron.—There is nothing to indicate that the views of the furnace interests and consumers are in nearer accord as to the price of second half tonnage than they have been for several weeks. The operators' position has certainly not been further weakened, and there are, in fact, some indications pointing to added strength. In spite of the apparently critical balance of the market it was in nowise disturbed by the recent stock panic which might well have precipitated a selling movement if a conscious weakness had existed in furnace conditions. Notwithstanding an almost entire cessation of second half buying, prices quoted by the several furnace interests are practically unchanged. Here and there orders for small tonnages are being placed, one sale last week of 1000 tons of No. 2 Foundry at $18, Birmingham, being reported. Other sales of from 200 to 300 tons at $18.50, Birmingham, are noted. Owing to an increasing shortage in foundry stocks there are quite a number of small orders for actual transit and prompt Iron constantly in the market. Prices for such business are difficult to quote with accuracy because of the wide variation that exists and the arbitrary divisions set up between delivery dates running through the first half of the year. Iron in actual transit commands as high as $23 for No. 2 Foundry, Birmingham, and $22.50 is quoted for shipments for the remainder of March. For second quarter delivery $21.50 is asked, while for April shipment alone $22 is quoted. Northern furnaces, being more fully sold up, are not disposed to make concessions at any point. The blowing out of Furnace A of the Iroquois Iron Company cuts off an average of 200 tons a day from the local product to which may be added the Mayville, Wis., furnace, which has also gone out of commission. The following quotations are for April, May and June shipments, including the 25c. advance in freight rate on Southern Irons, effective April 1:

Lake Superior Charcoal	$26.50 to $27.00
Northern Coke Foundry, No. 1	26.50 to 27.00
Northern Coke Foundry, No. 2	26.00 to 26.50
Northern Coke Foundry, No. 3	25.50 to 26.00
Northern Scotch, No. 1	26.00 to 27.00
Ohio Strong Softeners, No. 1	26.00 to 26.50
Ohio Strong Softeners, No. 2	25.50 to 26.00
Southern Coke, No. 1	26.35 to 27.10
Southern Coke, No. 2	25.85 to 26.35
Southern Coke, No. 3	25.35 to 25.85
Southern Coke, No. 4	24.85 to 25.35
Southern Coke, No. 1 Soft	26.35 to 26.85
Southern Coke, No. 2 Soft	25.85 to 26.35
Southern Gray Forge	21.85 to 22.35
Southern Mottled	21.85 to 22.35
Malleable Bessemer	26.50 to 27.00
Standard Bessemer	25.30 to 25.80
Jackson Co. and Kentucky Silvery, 6 %	30.30 to 30.80
Jackson Co. and Kentucky Silvery, 8 %	32.30 to 32.80
Jackson Co. and Kentucky Silvery, 10 %	34.30 to 34.80

Metals.—A steady and even demand from usual sources furnishes a fair amount of business in Copper and other metals. Spelter is scarce and prices locally are held a little firmer on small lots. We quote as follows: Casting Copper, 26¾c. to 27¼c.; Lake, 27c. to 27½c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 44.15c.; small lots, 45c.; Lead, Desilverized, 6.50c. to 6.60c., for 50-ton lots; Corroding, 7.25c. to 7.35c., for 50-ton lots; on car lots, 2¼c. per 100 lb. higher; Spelter, 7¼c.; Cookson's Antimony, 28½c., and other grades, 26½c. to 27½c.; Sheet Zinc is $8.50 list, f.o.b. La Salle, in car lots of 600-lb casks. On Old Metals we quote: Copper Wire, 21½c.; Heavy Copper, 21c.; Copper Bottoms, 20c.; Copper Clips, 20c.; Red Brass, 20c.; Red Brass Borings, 17½c.; Yellow Brass, 16c.; Yellow Brass Borings, 15c.; Light Brass, 13¼c.; Lead Pipe, 5.25c.; Tea Lead, 4¾c.; Zinc, 4¾c.; Pewter, No. 1, 25c.; Tin Foil, 33c.; Block Tin Pipe, 27½c.

Merchant Pipe.—In consequence of the stoppage of its mills occasioned by the recent flood, coming as it did on top of already congested order books that had been making deliveries difficult and slow, the National Tube Company has announced the withdrawal of prices on Steel Tubes and Merchant Pipe, and no orders will be accepted for shipments before June 1. On orders for delivery subsequent to that date prices are for the present withheld. Independent mills, though well supplied with orders, are not in all cases so badly behind, but for any prompt shipments they are in condition to make are asking two points advance over the standard quotations just withdrawn, or 72.35 for Black Steel Pipe on base sizes ¾ to 5 in., and Galvanized 62.35, carload lots, Chicago. These quotations are probably subject to variation according to time of delivery, quantity and specifications, and under the circumstances no absolute quotations can be given. Prices now as a result are being furnished only on application. Chicago jobbers are quoting for small lots from store 70 per cent. on Black Steel Pipe ¾ to 6 in. Iron Pipe is held at an advance of 4 to 5 points above these prices.

Boiler Tubes.—Owing to the action of the National Tube Company in withdrawing prices on Merchant Tubes aid declining to take any orders for shipment prior to June 1 it is obvious that the prices quoted are merely nominal. It is ascertained, however, that orders are being booked for reasonably prompt shipment at prices not above those quoted by some of the outside mills. On the other hand, it is likely that for general specifications and quick delivery advances over current quotations are in some cases being obtained. There is an active store demand, which on usual sizes is being promptly supplied from well assorted stocks. Mill quotations are nominally as follows on the base sizes: 2¾ to 5 in., in carload lots, Steel Tubes, 63.35; Iron, 50.35; Seamless, 49.35; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1¼ in.	35	35	35
1¾ to 2¼ in.	50	35	35
2½ in.	52½	35	35
2¾ to 5 in.	60	47½	47½
6 in. and larger	50	35	...

(*By Mail.*)

Billets and Rods.—There is no preceptible change in the condition of scarcity that has for weeks restricted trade to small and unimportant transactions. An order for 500 tons of Rods is reported to have been tendered to several producers without eliciting a quotation, and was finally met with an offer of $38 per gross ton, Chicago delivery, which was declined. The price nominally held for current orders is $36 to $37. Forging Billets are subject to variation in price, according to size, and are still quoted at $38 and upward.

Rails and Track Supplies.—Rail order cancellations, that were freely predicted to follow last week's spectacular slaughter of securities, have failed to appear, and there is no reason to believe that railroad programmes, so far as they relate to material contracted for, at least, will not be carried out. Not much new business is reported in Traction Rails, but Light Rails are in good demand. Track supply prices are firm, and for spot shipment of small lots premiums over prices quoted are being paid. We quote as follows: Angle Bars, accompanying Rail orders, 1907 delivery, 1.65c.; car lots, 1.90c. to 1.95c.; Spikes, 2.40c. to 2.50c., according to delivery; Track Bolts, 2.75c. to 2.85c., base, Square Nuts, and 2.90c. to 3c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 30 to 45 lb. sections, $35; 25-lb., $36; 20-lb., $37; 16-lb., $38; 12-lb., $39, f.o.b. mill. Standard Sections, $28, f.o.b. mill, full freight to destination.

Structural Material.—Not only is the volume of specifications maintained, but it is, if anything, increasing. Meanwhile plans are developing, that, when completed, will result in a large aggregate tonnage, which will furnish business for the mills when present contracts have been exhausted. Contracts for two more San Francisco buildings have been let, namely, the Luning and another for the Levi Strauss Realty Company, which together aggregate 1100 tons. Specifications for the new Rail mill at Gary, Ind., amounting to 2600 tons, have been completed and furnished. Prices from store are quoted without change, at 2.05c. to 2.10c., and mill prices are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.86½c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.86½c.; larger than 6 in. on one or both legs, 1.96½c.; Beams, larger than 15 in., 1.96½c.; Zees, 3 in. and over, 1.86½c.; Tees, 3 in. and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending and other shop work.

Plates.—With the leading mills provided with specifications for the first half of the year, and orders in hand covering much of the second half, it is difficult for the most hopeful to expect that much improvement will be realized in Plate deliveries for months to come. It is reported that some independent mills are still able to make 30 to 60 day deliveries on select specifications. Prices are unchanged, and we quote for future deliveries as follows: Tank Plate, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.86½c. to 2.06½c.; 3-16 in., 1.96½c. to 2.16½c.; Nos. 7 and 8 gauge, 2.01½c. to 2.21½c.; No. 9, 2.11½c. to 2.31½c.; Flange quality, in widths up to 100 in., 1.96½c. to 2.06½c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.96½c. to 2.16½c.; Flange quality, 2.06½c. Store prices on Plates are as follows: Tank Plate, ¼-in. and heavier, up to 72 in. wide, 2.20c. to 2.30c.; from 72 to 96 in. wide, 2.30c. to 2.40c.; 3-16 in., up to 60 in. wide, 2.30c. to 2.40c.; 72 in. wide, 2.55c. to 2.65c.; No. 8, up to 60 in. wide, 2.35c. to 2.45c.; Flange and Head quality, 0.25c. extra.

Sheets.—The floods in Pittsburgh and along the Ohio River have put a number of mills out of service at a time when, running at full capacity, they were not keeping abreast of their orders in output. As a result the scarcity heretofore existing will become all the more pronounced, though fortunately the stoppages will, in nearly all cases, be of short duration. The delay in delivery of Galvanized Sheets is slowly becoming more extended, though so far no further advance in price is reported. We quote as follows: Blue

Annealed, No. 10, 2.01½c.; No. 12, 2.06½c.; No. 14, 2.11½c.; No. 16, 2.21½c.; Box Annealed, Nos. 17 to 21, 2.51½c.; Nos. 22 to 24, 2.56½c.; Nos. 25 and 26, 2.61½c.; No. 27, 2.66½c.; No. 28, 2.76½c.; No. 29, 2.86½c.; No. 30, 2.96½c.; Galvanized Sheets, Nos. 10 to 14, 2.81½c.; Nos. 15 and 16, 3.01½c.; Nos. 17 to 21, 3.16½c.; Nos. 22 to 24, 3.31½c.; Nos. 25 and 26, 3.51½c.; No. 27, 3.71½c.; No. 28, 3.91½c.; No. 30, 4.41½c.; Sheets from store: Blue Annealed, No. 12, 2.30c.; No. 14, 2.35c.; No. 16, 2.45c.; Box Annealed, Nos. 18 to 21, 2.70c.; Nos. 22 to 24, 2.75c.; No. 26, 2.80c.; No. 27, 2.85c.; No. 28, 2.95c.; No. 30, 3.35c.; Galvanized from store: Nos. 10 to 20, 3.30c. to 3.35c.; Nos. 22 to 24, 3.55c. to 3.60c.; No. 26, 3.65c. to 3.70c.; No. 27, 3.85c. to 3.95c.; No. 28, 4.15c.; No. 30, 4.65c. to 4.70c.

Bars.—The market situation as to Bars, both of Iron and Steel, needs no bolstering. Prices are firm, and though no business of exceptional character is reported, orders of fair tonnage are plentiful. Prices are unchanged and quotations are as follows: Iron Bars, 1.81½c. to 1.86½c.; Steel Bars, 1.76½c., both half extras; Hoops, 2.16½c., extras as per Hoop card; Bands, 1.76½c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.86½c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Steel.—Reports are in uniform agreement as to the satisfactory condition of trade and firmness of prices. Prices are unchanged, and are as follows: Planished or Smooth Finished Tire Steel, 1.96½c.; Iron Finish, up to 1½ x ½ in., 1.91½c.; Iron Finish, 1½ x ½ in. and larger, 1.76½c., base; Channels for solid rubber Tires, ¾ to 1 in., 2.26½c., and 1⅛-in. and larger, 2.16½c.; Smooth Finished Machinery Steel, 2.16½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 2.06½c.; Cutter Shoe, 2.35c.; Toe Calk Steel, 2.31½c.; Railroad Spring, 1.96½c.; Crucible Tool Steel, 6½c. to 8c., and still higher prices are asked on special grades. Shafting, 50 per cent. off in car lots and 45 per cent. in less than car lots, base territory.

Cast Iron Pipe.—There is yet too much frozen ground for the general opening of work that is relied upon to liven the Pipe market. Municipalities here and there are buying, but the bulk of business now moving is made up of the smaller orders. We quote, as follows: Water Pipe, 4-in., $38 to $39; 6 to 12 in., $37 to $38; 16-in. and up, $36 to $37, with $1 extra for Gas Pipe.

Coke.—Present contracts will soon be expiring, and though no new deals are yet reported, negotiations looking to their closure will soon be under way. Prices on By-Product are easier. We quote 72-hr. Connellsville Coke for prompt shipment at $3.75 per car lot at the oven; By-Product, $6.90 f.o.b. Chicago, prompt delivery.

Old Material.—Very little change is observed in any of the different grades of Scrap. Mills are well stocked and show little disposition to buy, even at shaded prices. There is a good demand for all grades of Cast Scrap, which will doubtless continue as long as the ruling prices on Pig Iron obtain. The following quotations are on gross tons, f.o.b. Chicago:

Old Iron Rails	$25.00 to $26.00
Old Steel Rails, 3 ft. and over	19.00 to 19.50
Old Steel Rails, less than 3 ft.	18.00 to 18.50
Relaying Rails, standard sections, subject to inspection	31.00 to 32.00
Old Car Wheels	24.00 to 24.50
Heavy Melting Steel Scrap	16.00 to 16.50
Frogs, Switches and Guards	16.50 to 17.50
Mixed Steel	12.50 to 13.00

The following quotations are per net ton:

Iron Fish Plates	$19.50 to $20.50
Iron Car Axles	26.50 to 27.00
Steel Car Axles	21.50 to 22.00
No. 1 Railroad Wrought	15.25 to 15.75
No. 2 Railroad Wrought	14.25 to 14.75
Railway Springs	15.50 to 16.00
Locomotive Tires, smooth	16.50 to 17.00
No. 1 Dealers' Forge	12.00 to 12.50
Mixed Busheling	11.00 to 11.50
Iron Axle Turnings	11.50 to 12.00
Soft Steel Axle Turnings	11.50 to 12.00
Machine Shop Turnings	11.50 to 12.00
Cast Borings	9.25 to 9.75
Mixed Borings, &c.	9.00 to 9.50
No. 1 Mill	10.00 to 10.50
No. 2 Mill	9.00 to 9.50
No. 1 Boilers, cut to Sheets and Rings	11.50 to 12.00
No. 1 Cast Scrap	19.00 to 20.00
Stove Plate and Light Cast Scrap	15.50 to 16.00
Railroad Malleable	16.50 to 17.00
Agricultural Malleable	15.00 to 16.00

The Council of the Iron and Steel Institute has accepted an invitation to hold the autumn meeting this year in Vienna, on September 23-25, it being the twenty-fifth anniversary of the previous meeting held in that city. The meeting will be followed by excursions to Bohemia and to Styria, by invitation of the Prague Iron Industry Company and the Austrian Alpine Mining Company.

Philadelphia.

PHILADELPHIA, PA., March 19, 1907.

Considering the slaughter of security values during the past few days in the stock markets, it is astonishing that the Iron and Steel trades have not been influenced in the slightest degree. If there is any change at all, the situation is stronger, and the scarcity for early delivery, which has so long prevailed, is likely to be greater during the next few weeks than it has yet been. The floods in Pittsburgh and at other Western points have thrown out of commission a large number of furnaces, so that the March output of Pig Iron will unquestionably be less than has been figured on, and early deliveries are likely again to command extreme premiums. The same influences, however, may affect the consumption of Pig Iron, but in any case it is unfortunate that anything should arise to interfere with production at this particular time. It is almost impossible to get anything for delivery during March and April, and those who have a little Iron, which they can spare, hardly know what figures to ask for it, but they will certainly want more than their recent asking prices. The full effect has not been felt yet, however, and it may be that things will run along about as they are for a brief period, but there can be no question that the market is barer than ever of Iron for immediate use. Imports have been very large lately, but as the vessels were in port and immediate deliveries could be made, everything was snapped up at full prices. It is believed, however, that shipments from the other side will not be nearly as large in the next two or three months as they were in the past two or three months. It is said that some Scotch Iron has been negotiated in the English markets, and shipments of those grades may, perhaps, be renewed, but for various reasons it is said that Middlesbrough Irons will not be shipped to the same extent that they have been in the past several months. This, of course, will throw more work on the American furnaces, and as they are already far behind with deliveries, it is difficult to see how the trade can avoid a serious shortage. If the Western furnaces should have to remain out for any length of time it will accentuate the situation still more, but it is thought that a week or ten days will again place them in normal condition, but meanwhile the damage has been done and the loss of production cannot be made up when it is most needed. The prospect for a strong market up to midsummer, therefore, appears to be absolutely assured, and while, under ordinary circumstances, the erratic movements in Wall Street would have had a depressing influence, in the present instance they appear to be totally ignored, and so far as the buying and selling of Iron are concerned the situation looks considerably better than it did at this time last week. There is a slightly easier feeling in Plates and Bars, but the demand is moderately active, and it is believed that there will be plenty of work during the next few months. Spot stuff and deliveries during the second quarter are promptly taken at quoted rates; whatever shading may be done is for deliveries during the late summer and for fall months.

Pig Iron.—The aggregate of sales in this market during the past week has been quite large, but confined chiefly to one or two selling agencies who happen to have material that can be made available for prompt delivery. One house sold over 20,000 tons within three or four days, but a large proportion was for immediate shipment, which the sellers were enabled to do, as the vessels were in port ready for unloading. Some of this Iron was sent to Pittsburgh, some to northwest Pennsylvania, Ohio, and to central New York, besides a fair proportion of small lots to local consumers; while lots of a few hundred up to 2000 tons were included in the first named shipments. The outlook for this and next months' deliveries is, however, exceedingly disappointing to consumers, who have been figuring on getting better deliveries of material bought for first and second quarter shipments, but the furnaces find it physically impossible to increase their output, so there is no alternative but to pick up material as best they can and at the best prices they can, or cut down their consumption. This, of course, means irregular prices for next quarter's deliveries, and still more so for deliveries within the next 30 days, as consumers feel that they cannot afford to turn down anything that can be made available, the only alternative being to suspend work, which no one wants to do if there is any way of avoiding it. For the last half of the year consumers are uncertain as to what their requirements will be, but in view of the experience of the past six or eight months makers are less anxious than they otherwise would be to secure business for forward delivery. The character of the second quarter is measurably clear, and there is no absolute certainty that the third quarter will be materially different from that of the first half of the year, so that 50c. or $1 a ton is about as much of a concession as sellers feel that they are warranted in making; but buyers are indifferent even at concessions of that kind. But it is realized on both sides that the situation is one of great uncertainty, and unless the financial situation clears it may be that changes will occur which at present are hardly considered. The overshadowing

feature, however, is that for the present Iron is scarce and sellers are in a position to name their own prices; but in regard to the future, there are not many that feel like taking any fixed position, preferring to meet conditions as they arise. Most of the recent sales have been Foundry and Mill Irons, no business whatever having been reported in Basic or other Steel making Irons. Charcoal Iron has been placed, both foreign and domestic, at about $30, Eastern delivery. The general range of quotations for deliveries in buyers' yards in eastern Pennsylvania or adjoining territory to-day would be about as follows:

Second Quarter 1907.

No. 2 X Foundry	$25.25 to $25.50
Standard Gray Forge	23.00 to 23.50
Basic	24.25 to 25.00
Low Phosphorus	27.00 to 27.50
Middlesbrough, on dock	21.50 to 22.00

Third Quarter 1907.

No. 2 X Foundry	$24.25 to $24.50
Standard Gray Forge	22.50 to 22.75
Basic	24.00 to 24.50
Low Phosphorus	27.00 to 27.25

Fourth Quarter 1907.

No. 2 X Foundry	$23.25 to $23.75
Standard Gray Forge	22.00 to 22.25
Basic	23.50 to 23.75
Low Phosphorus	26.75 to 27.00

Ferroalloys.—Some very important negotiations are in progress, but they are not far enough advanced to give any particulars at this time. In the meanwhile, Ferromanganese is nominally worth about $72 alongside ship for second quarter delivery, but for the last half of the year $67, if not less, will probably be accepted. Some large business is pending, the completion of which we hope to announce next week.

Steel.—There is a fairly good demand, and prices are steady, as last quoted, namely, $33 to $34, delivered, for Soft Steel Billets, according to quantity and date for delivery; Forging Steel, $35 to $40. Mills are running to full capacity, and prospects within the next two or three months are very excellent.

Plates.—Mills are not getting as many orders as some of them could handle, and, as the tonnage on the books has been somewhat reduced, it is not unlikely that first-class buyers could place desirable orders at concessions of one-half tenth to a tenth less money. General quotations, however, are about as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	2.13½	2.18½
Flange or Boiler Steel	2.23½	2.28½
Marine	2.53½	2.58½
Locomotive Firebox Steel	2.63½	2.68½

The above are base prices for ¼-in. and heavier. The following extras apply:

	Extra per 100 lb.
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Structural Material.—There is nothing of importance to announce this week in connection with local work, although there are two or three important contracts which it is expected will be closed before the end of the month. One is the new building of the Young Men's Christian Association, the other for a large office building at the corner of Fifth and Chestnut streets for the Girard estate. The demand for small lots of material is very good, and mills are doing a satisfactory amount of business at unchanged prices, namely, 1.83½c. to 2c. for Beams, Angles and Channels, according to specifications.

Bars.—There is a fairly good demand, but prices are not quite as strong as could be desired, and in some instances less than 1.93½c. has been quoted, but the character of the Iron was not altogether first class, although it sometimes serves to give buyers a club to knock down the quotations of the best makes of Bar Iron. Steel Bars are not obtainable this side of midsummer unless at a premium, which makes the price for immediate delivery practically about the same as for Refined Iron. There are some inquiries in the market, and it is thought that prices will be maintained at around 1.93½c., although the feeling is somewhat unsettled.

Sheets.—There is an unusually good demand for Sheets and specifications are being sent in with notable promptness. Prices are steady and unchanged as last quoted for mill shipments and a tenth additional for small quantities: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 to 26, 3c.; No. 27, 3.10c., and No. 28, 3.20c.

Old Material.—Prices remain about the same as they were a week ago, although the demand is very uneven. For some articles, such as Turnings and Cast Borings, there is a good market at full prices, while some of the other specialties are inclined to droop, and buyers expect that they will be able to do better as the season advances, although in the meantime spot stuff is a little scarce. Bids and offers for deliveries in buyers' yards are about as follows:

Steel Crops and Rails	$19.25 to $19.50
No. 1 Steel Scrap	18.75 to 19.25
Low Phosphorus	22.50 to 23.00
Old Steel Axles	22.00 to 22.50
Old Iron Axles	31.00 to 32.00
Old Iron Rails	27.00 to 28.00
Old Car Wheels	24.00 to 25.00
Choice No. 1 R. R. Wrought	21.00 to 22.00
No. 1 Yard Scrap	19.00 to 20.00
Long and Short	18.75 to 19.00
Machinery Scrap	22.25 to 22.75
Wrought Iron Pipe	16.50 to 17.25
No. 1 Forge Fire Scrap	17.00 to 17.25
No. 2 Light	11.75 to 12.00
Wrought Turnings	16.75 to 17.00
Axle Turnings	17.00 to 17.25
Stove Plate	16.75 to 17.25
Cast Borings	15.50 to 16.00
Grate Bars	15.75 to 16.25

Pittsburgh.

PARK BUILDING, March 20, 1907.—(*By Telegraph.*)

Pig Iron.—The Bessemer Pig Iron Association has sold about 10,000 tons of Pig Iron to the Steel Corporation for April delivery at $22, Valley furnace, and has also given an option on about 15,000 tons for May delivery at the same price, and there is no doubt that this Iron will be taken. W. P. Snyder & Co. have sold to the Cambria Steel Company 36,000 tons of Bessemer Iron for equal deliveries in April, May and June, the price being open, but to be the average monthly price of Bessemer Iron at Valley furnace. These two sales for second quarter delivery amount to about 60,000 tons, and practically clean up all the available Bessemer Iron for second quarter delivery. Aside from the above, there has been very little buying of Pig Iron in the past week, partly due to the flood, which put a large number of blast furnaces out of commission for three or four days, and also caused great interruption in telephone and telegraphic service. We quote Bessemer Iron at $22, Valley furnace, and the market is firm at that price. Northern No. 2 Foundry is held at about $24, Valley furnace, for prompt delivery, and $22.50 to $23 for second quarter shipment. Forge Iron is firm at about $20.90, Valley furnace, or $21.75, Pittsburgh.

Steel.—The Carnegie Steel Company has bought 5000 tons more of 4 x 4 in. Open Hearth Billets from the New York State Steel Company, making a total of 15,000 tons thus purchased. This Steel will not come to Pittsburgh, but will be applied by the Carnegie Steel Company on contracts it has for Steel in Eastern territory. The supply of Steel does not seem to be getting any better, and there is still much complaint from consumers over failure of the mills to make prompt deliveries. We quote 4 x 4 in. Bessemer Billets at $29 to $29.50 and Open Hearth about $31.50, Pittsburgh. Sheet and Tin Bars in random lengths are held at $30 to $30.50, Pittsburgh or Youngstown mill.

(*By Mail.*)

The damage done to manufacturing plants in the Pittsburgh District located along the Monongahela, Allegheny and Ohio rivers by the flood last week, which on Thursday attained a hight of 36 ft. 3 in., was enormous and has been estimated at about $10,000,000. Practically all of the manufacturing plants located on the above named three rivers suffered heavy losses by the high water and then from the mud and other refuse which the water left after it had receded. A general cleaning up is now going on, and many of the affected plants have again started up. The shutdown, which lasted about three days, means a great loss in output and will have the effect of further delaying shipments by the mills, which were already very much behind in deliveries before the flood came. The event of the week is the purchase of 9000 to 10,000 tons of Bessemer Iron by the Carnegie Steel Company from the Bessemer Pig Iron Association for April delivery at $22, Valley furnace, this Iron having been bought last week at a conference held between W. E. Corey of the Steel Corporation, J. G. Butler, Jr., of the Bessemer Pig Iron Association, and several other furnace interests. We can also report a sale of about 36,000 tons of Bessemer Iron by W. P. Snyder & Co., to the Cambria Steel Company, equal deliveries over April, May and June, the price to be the average price of Bessemer Iron f.o.b., Valley furnace. We may also note that the Bessemer Pig Iron Association has given the Steel Corporation an option on all its surplus Iron for May, which will amount to about 15,000 tons. This option is certain to be exercised, and the Iron will be sold at $22 at Valley furnace. These transactions amount to about 60,000 tons, and practically clean up all the surplus Iron of W. P. Snyder & Co., the Bessemer Pig Iron Association, Cherry Valley Iron Company and other producers to July 1, so that it would seem certain that the present market on Bessemer Iron, which is $22, Valley furnace, will be maintained through the second quarter. There has been but little done in other grades of Pig Iron, and in fact on any other lines, owing to the flood of last week, which temporarily suspended business for three days. The mills report that the volume of new tonnage being received continues heavy, and the flood will have the

effect of causing further delays in shipments. The whole market looks good from one end to the other, and has not been perceptibly affected by the recent flurry in stocks in Wall Street.

Ferromanganese.—We continue to quote 80 per cent. foreign for prompt delivery at $73, Baltimore, or about $75, Pittsburgh. For delivery in second and third quarters about $68, Baltimore, or $69.92, Pittsburgh, is being quoted.

Muck Bar.—Some of the mills making Muck Bar were flooded last week, taking three days' output out of the market, which will be felt. We quote best grades of Muck Bar made from all Pig Iron at $37, Pittsburgh, while Bar made from part Scrap is about $33 to $34, Pittsburgh.

Rods.—We continue to quote Bessemer Rods at nominally $37 to $38 and Open Hearth, $38 to $39, Pittsburgh. Rods continue very scarce, and for prompt shipments would probably bring higher prices.

Skelp.—The mills are sold up for the next three months or longer, and Skelp of all kinds for reasonably prompt delivery is hard to obtain and continues to bring high prices. The market is firm, with indications of going higher. We quote: Grooved Steel Skelp, 1.90c. to 1.95c.; Sheared Steel Skelp, 2c. to 2.05c.; Grooved Iron Skelp, 2.15c.; Sheared Iron Skelp, 2.25c., all f.o.b. Pittsburgh.

Steel Rails.—No large orders were placed last week, the tonnage booked by the Carnegie Steel Company amounting to about 15,000 tons of Standard Sections and 1100 tons of Light Rails. Up to this time the company has booked for 1907 delivery about 745,000 tons of Rails, of which about 705,000 tons are Standard Sections and 40,000 tons Light Rails. This tonnage fills its mills up on Standard Sections to September or October and on Light Rails about as far ahead, as only about 5000 tons of Light Rails per month are made on the No. 3 mill at Edgar Thomson. This mill could make 15,000 tons of Light Rails per month if pushed, but the company has not enough Steel to spare to keep it running to full capacity. The Carnegie Company expects to roll this year about 1,100,000 tons of Light Rails and Standard Sections. We quote Light Rails as follows: $33 to $34 for 20 to 45 lb.; $34 to $35 for 16-lb., and $35 to $36 for 12-lb., at mill. Angle Splice Bars are held at 1.65c., and Standard Section Rails at $28, at mill.

Structural Material.—During the flood last week the American Bridge Company had about 2 ft. of water in the foundry and 18 in. in the machine shop at its Ambridge, Pa., works, while the Schiffler Works in the Pittsburgh District was also under water. The Rankin Works of the McClintic-Marshall Construction Company was also flooded, but all these plants are again in operation. The amount of new work being placed is small, but a good deal of tonnage is in sight, some of which is expected to be given out in the near future. The Michigan Central is in the market for 3600 tons of bridge work, and it is probable that a Steel bridge will be built across the Ohio River, connecting the new plant of the Jones & Laughlin Steel Company at Aliquippa with the Pennsylvania Lines West. Deliveries on Plates and Steel Bars are still delayed, but on Structural Shapes are reasonably prompt. We quote: Beams and Channels, up to 15-in., 1.70c.; over 15-in., 1.80c.; Angles, 3 x 2 x ¼ in. thick up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3-in. and larger, 1.70c.; Tees, 3-in. and larger, 1.75c. Under the Steel Bar card, Angles, Channels and Tees under 3-in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—The flood last week caused a shutdown of most of the leading Plate mills for 72 hr. or longer, and this will cause still further delay in shipments. New tonnage being placed with the mills continues heavy, and while some concerns can make deliveries inside of six to eight weeks, the Carnegie Steel Company will not promise shipments inside of four to five months. Premiums over official prices continue to be paid for prompt shipment. For forward delivery we quote: Tank Plate, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.70c. to 1.80c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than ¼-in. to and including 3-16-in. Plates on thin edges	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 in	.05
Plates over 110 to 115 in	.10
Plates over 115 to 120 in	.15
Plates over 120 to 125 in	.25
Plates over 125 to 130 in	.50
Plates over 130 in	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Firebox Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40
Shell Grade of Steel is abandoned.	

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within 10 days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Sheets.—We note a continued heavy demand for Black and Galvanized Sheets. The flood last week put many of the Sheet mills out of commission for three or four days, and this will still further delay shipments, on which the mills are much behind. The American Sheet & Tin Plate Company cannot promise deliveries under six weeks in any event, and on some grades of Sheets from 8 to 12 weeks. The scarcity in Sheet Bars seems to be getting worse, and the mills are more or less inconvenienced by delay in getting Steel. Prices are firm, and we quote: Blue Annealed Sheets, No. 10 gauge and heavier, 1.85c.; Nos. 11 and 12, 1.90c.; Nos. 13 and 14, 1.95c.; Nos. 15 and 16, 2.05c.; Box Annealed, Nos. 17 to 21, 2.35c.; Nos. 22 to 24, 2.40c.; Nos. 25 and 26, 2.45c.; No. 27, 2.50c.; No. 28, 2.60c.; No. 29, 2.75c.; No. 30, 2.85c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.65c.; Nos. 12 and 14, 2.75c.; Nos. 15 and 16, 2.85c.; Nos. 17 to 21, 3c.; Nos. 22 and 24, 3.15c.; Nos. 25 and 26, 3.35c.; No. 27, 3.55c.; No. 28, 3.75c.; No. 29, 4c., and No. 30, 4.25c. We quote No. 28 Gauge Painted Roofing Sheets at $1.85 per square, and Galvanized Roofing Sheets, No. 28 gauge, $3.25 per square for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances.

Hoops and Bands.—The mills are running mostly on specifications on contracts, but a fair amount of new tonnage is being placed. For forward delivery we quote: Steel Hoops, 2c., and Bands for all purposes at 1.60c., base, half extras, as per Standard Steel card. These prices are for carloads lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of $2 a ton being charged for less than carloads.

Tin Plate.—A very heavy tonnage has been booked by the mills for second quarter delivery, and a fair amount for third quarter shipment. On the latter, we are advised, a premium of 10c. per box was obtained. The trade still expects an advance of 10c. per box or more to be made at an early date by the American Sheet & Tin Plate Company, but no official information as to whether this will be done has been given out. The market is very firm, and we quote: $3.90 for 100-lb. Cokes, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5c. a box is allowed for carload and larger lots.

Iron and Steel Bars.—It will probably be several weeks before the Steel Bar mills take official action on the request of the large implement makers that they be allowed a concession in prices on season contracts. All indications are that no concession will be granted, but no official statement of the matter has been made by any of the leading Steel Bar interests. The volume of new tonnage in both Iron and Steel Bars continues heavy and prices are firm. The Carnegie Steel Company, Republic Iron & Steel Company, Jones & Laughlin Steel Company and other leading makers of Steel Bars have a much heavier tonnage on their books than ever before in their history. This also applies to mills rolling Iron Bars, all of which are well sold up and somewhat behind in deliveries. We quote Refined Iron Bars at 1.80c., Pittsburgh, and Steel Bars at 1.60c., base, half extras, f.o.b. Pittsburgh, these prices being for forward delivery. For prompt shipment premiums of $1 and $2 a ton are asked.

Railroad Spikes.—The demand for both standard and small sizes of Spikes continues heavy, all the leading makers being well filled up and somewhat behind in deliveries. Prices are firm, and we quote standard sizes at $2.40 to $2.45, and the smaller sizes at $2.50 to $2.60 per 100 lb. For prompt shipment premiums of $1 to $2 per 100 lb. are being paid.

Merchant Steel.—A moderate amount of new tonnage is being placed, but the mills are operating mostly on contracts, on which liberal specifications are being received. Some of the mills in the Pittsburgh District were flooded last week, but are again in operation. Prices are firm and we quote: Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c., for ordinary grades, and 10c. and upward for special grades. The demand for Shafting is reported active, and prices are fairly well maintained. We quote Cold Rolled Shafting at 50 per cent. off in carloads, and 45 per cent. in less than carloads, delivered in base territory.

Pipes and Tubes.—Last week under this heading we referred to the deluge in orders for Pipe, while this week it is appropriate to refer to another kind of "deluge," the latter being of water, which temporarily put a number of leading Pipe mills out of commission. The plants worst affected by the high water in the Pittsburgh District were the Continental, Pennsylvania and McKeesport mills of the National Tube Company, A. M. Byers & Co., and Spang, Chalfant & Co. In the Wheeling District the Riverside department of the National Tube Company and the Pipe mills of the La Belle Iron Works were under water for 48 hr. The damage done to these plants was heavy, but will be re-

paired at once, and they will be in operation again this week. Nothing of special interest has developed in the Pipe trade since our last report. New business continues to come in in heavy volume, and the National Tube Company is so badly congested that it still refuses to accept orders for shipment prior to June. Other leading mills are almost as badly off, and in cases where anything like prompt deliveries can be made Pipe mills can practically name their own prices. We now resume giving the table of discounts on both Iron and Steel Pipe, and note that the extreme discount on Merchant sizes of Steel Pipe, from ¾ to 6 in., is 75 and 5 per cent., and higher prices are being quoted by some mills. The extreme discount on Merchant sizes of Iron Pipe is now 69 per cent. on ¾ to 6 in., on which about a half point is allowed to the large trade. Official discounts on Steel Pipe, which are shaded about one point or more to the large trade, are as follows:

Merchant Pipe.

	Jobbers, carloads. Steel. Black.	Galv.
	%	%
⅛ to ¼ in	66	50
⅜ in	68	54
½ in	70	58
¾ to 6 in	74	64
7 to 12 in	69	54
Extra strong, plain ends:		
⅛ to ⅜ in	59	47
½ to 4 in	66	54
4½ to 8 in	62	50
Double extra strong, plain ends:		
½ to 8 in	55	44

Official discounts on Iron Pipe, which are shaded one-half point or more to the large trade, are as follows, f.o.b. Pittsburgh:

Standard Genuine Iron Pipe.

	Black.	Galv.
	%	%
¾ to 6 in	69	59
½ in	64	52
⅜ in	62	44
⅛ and ¼ in	60	44
7 to 12 in	64	49
Extra Heavy Iron Pipe, Plain Ends.		
⅛, ¼ and ⅜ in	64	42
½ to 4 in	61	49
4½ to 8 in	57	44

Boiler Tubes.—Much damage was done last week by the flood to a number of leading mills making Boiler Tubes, four or five plants being shut down for three or four days on account of the high water. The demand for both Merchant and Locomotive Tubes continues heavy and official discounts are merely nominal, quotations being $2 a ton or more over these official discounts, which are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in	41	47
1¾ to 2¼ in	42	59
2½ in	47	61
2¾ to 5 in	52	65
6 to 13 in	42	59

Iron and Steel Scrap.—Most of the finishing mills that use Scrap were under water for three or four days last week, and practically nothing has been done in the way of buying Old Material. The market is fairly steady, but it is believed prices are as high as they will go for some little time. Dealers quote as follows: Heavy Steel Scrap, $18 to $18.25, for Pittsburgh, Sharon or Steubenville delivery; No. 1 Wrought Iron Scrap, $19.50; No. 2, $18; Old Steel Rails, short pieces for Open Hearth purposes, $18 to $18.25; Old Steel Rails, rerollers, $19.75 to $20; Machine Shop Turnings, $15.75 to $16; Bundled Sheet Scrap, $16.75 to $17; Tin and Terne Plate Clippings, $18.50 to $19 in net tons. Low Phosphorus Melting Steel is $22; Cast Iron Borings, $14.50; Old Car Wheels, $24.50 to $25; Steel Axles, $22 to $22.50; No. 1 Cast Scrap, $21.50; Grate Bars, $17; Stove Plate, $16.50. All above prices are in gross tons, f.o.b. Pittsburgh, unless otherwise noted.

Coke.—Most of the Coke plants in the Upper and Lower Connellsville regions were severely affected by the flood last week, and the output in the last three days of the week was relatively small. There is still plenty of Coke to go around, and the supply of cars is ample. We quote strictly Connellsville Furnace Coke for prompt shipment at $3, but on a firm offer it is believed $2.90 could be done. Connellsville 72-hr. Foundry Coke for prompt shipment is sold at $3.60 to $3.75, at oven, some concerns refusing to accept less than $3.75.

The L. A. Green Company, dealer in Rails, Railroad Supplies and Iron and Steel Scrap, Keystone Building, Pittsburgh, has been appointed sales agent of the Linton Rolling Mill Company, manufacturer of Light Steel Rails and Spikes.

The offices of the Forter-Miller Engineering Company, engineer and contractor, have been removed from the Westinghouse Building to the eighth floor of the Hartje Building, First avenue and Wood street, Pittsburgh.

Cleveland.

CLEVELAND, OHIO, March 19, 1907.

Iron Ore.—Official notices of an advance of Iron Ore rates have been received by the local Ore dealers from a number of the railroads. An advance of 5 per cent. is made in the rate from Cleveland and nearby points to the Pittsburgh, Valley, Wheeling and Ironton districts. An increase of 10 per cent. is made in the Ore rate from Buffalo to the Eastern furnaces. The new rates will go into effect on different dates. Some roads will charge the increased rate beginning with April 5, others will not make the change until May 1, and on other lines the new schedule will go into effect on some date between the two above. The raise in freight rates, it is expected, will result in a large increase of shipping orders during the remainder of March. Shipments of Ore from Lake Erie docks have been quite heavy the past few days, and consumers will try to get as much of their Ore as possible moved from the docks to the furnaces before the higher rates go into effect. The Ore market is quiet, with prices firm and stationary. There is still some inquiry for Ore for shipment before the opening of navigation, but it is almost impossible now to find any for sale on the docks. Some furnaces that have been unable to make purchases will be compelled to change their mix in order to make their supply hold out until they can get 1907 Ore. There are some inquiries in the market for next season's non-Bessemer Ore. Nominal quotations for 1907 deliveries at Lake Erie docks are as follows per gross ton: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.25; Mesaba non-Bessemer, $4; Siliceous Bessemer, $2.75; Siliceous non-Bessemer, $2.50.

Pig Iron.—There is still considerable inquiry for Northern Foundry Iron for spot shipment, and for the second quarter and a number of sales of No. 2 Foundry for immediate delivery have been made at $25 to $26. The sales were all made in small lots to foundrymen who have run short of Iron for immediate needs, or who have underestimated their needs for the second quarter. Prices of Foundry Iron remain firm, with no indication of weakening. For second quarter the furnaces are asking $24, at furnace, and some furnaces that have not sold their entire output are holding off, preferring to wait with the expectation of getting better prices by selling their Iron for spot shipment a few weeks later. The price for No. 2 Foundry for second half delivery remains at $22, at furnace. There are scarcely any inquiries for Iron for last half delivery, although a few sales of small lots have been made during the week. The only large sale reported here during the week was the purchase of 5000 tons of No. 2 Northern Foundry for second half delivery by the General Electric Company. The purchase was made from furnaces in the Buffalo District on the basis of $22, at furnace. A report is current among local dealers that some of the large Pipe interests and other heavy consumers of Foundry Iron are holding off on their last half purchases, with the hope of forcing the price down to $20 a ton or under. Furnaces will begin to use 1907 Ore about May 1, and owing to the increased cost of the Ore the cost of production of Pig Iron will be increased from $1.50 to $2 a ton after that date. The Basic and Bessemer Iron situation remains unchanged. No weakness is apparent in the market. There are some inquiries for Basic Iron for the second quarter but none for the last half. Practically no Basic Iron is to be had for the second quarter. Basic furnaces continue to hold their Iron at $20.50 to $21 for the second half. Southern Iron remains firm at $18.50, Birmingham, for second half delivery. Quotations for the last half of 1907, f.o.b. Cleveland, are as follows:

Bessemer	$21.50 to $22.00
Northern Foundry, No. 1	22.50 to 23.00
Northern Foundry, No. 2	22.00 to 22.50
Northern Foundry, No. 3	21.50 to 22.00
Southern Foundry, No. 2	22.85
Gray Forge	21.00 to 21.50

Coke.—The market is quiet and prices are weak. There is a fair demand for prompt shipment and second quarter Coke, but consumers are not buying for the second half. Shipments are poor because of the scarcity of cars and the river floods. Furnace Coke is selling at $3 to $3.15 at oven for prompt shipment. Foundry Coke is quoted at $3.85 to $4 at oven.

Finished Iron and Steel.—Specifications continue to come in heavily, and the situation is very satisfactory from the producers' standpoint. No improvement is noted in deliveries, and in some lines they are a little worse. Not a great deal of new business is being contracted for, except for prompt shipment at premium prices. Some consumers are making inquiries for last half deliveries at present prices, but the mills are inclined to hold off as much as possible on making contracts for the second half of the year. The demand for Plates and Shapes on specifications seems a little heavier, and Plate deliveries are worse. Some of the mills are promising shipment in about 90 days. There are inquiries in the local market for a large amount of new tonnage in Plates and Structural Material. Plates for prompt shipment are held at 2c., Pittsburgh. The demand

for Steel Bars continues heavy and the price ranges from 1.70c. to 1.80c., Pittsburgh, the higher price being asked for quick deliveries. The Iron Bar situation is not as tight as Steel, and some mills are quoting Iron Bars at 1.70c., Pittsburgh, for carload lots, and 1.75c., Pittsburgh, for less than car lots. The local demand for Merchant Pipe is heavier than usual and dealers report that the consumption has been increased by purchases by concerns that have not previously been in the market for this class of material. Some of the Pipe mills are promising deliveries in about 60 days. There is a good demand for Billets. Forging Billets are quoted at from $36 to $40, Cleveland, for reasonably prompt delivery, and Rerolling Billets are selling at $30 to $32, Pittsburgh. Sheet deliveries continue to grow worse and the leading producers cannot make deliveries on Galvanized within six months. Owing to the slow deliveries, the local jobbers continue to be rushed with orders for all kinds of Finished Iron and Steel for quick delivery at warehouse prices. Local stock prices are unchanged. Steel Bars are selling at 1.95c. to 2c., out of stock, and Iron Bars at 2c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.30c.; No. 28, One Pass Cold Rolled, 3.05c.; No. 28, Galvanized, 4.15c. The stock price on Boiler Tubes, 2¾ to 5 in., is 64 per cent. discount.

Old Material.—There is a heavy demand for No. 1 Cast from foundries whose supplies of Pig Iron are low. They are buying Scrap to piece out, and dealers could sell much more of the Scrap than the available supply. The price of Cast Scrap remains very firm. There is still a strong demand for Borings and Turnings, and Steel Scrap is active. Stove Plate is firm, and a slight advance is noted in its price. Otherwise the market is quiet and the trading is mostly among dealers. The following are dealers' prices to the trade per gross ton, f.o.b. Cleveland:

Old Steel Rails	$17.50 to $18.00
Old Iron Rails	23.50 to 24.50
Steel Car Axles	21.50 to 22.50
Old Car Wheels	21.50 to 22.50
Relaying Rails, 50 lb. and over	29.00 to 31.00
Relaying Rails, under 50 lb.	31.00 to 32.50
Heavy Melting Steel	17.00 to 17.50
Railroad Malleable	17.50 to 18.50
Agricultural Malleable	15.50
Light Bundled Sheet Scrap	16.00 to 17.00
Bundled Tin Scrap	17.00 to 19.00

The following quotations are per net ton, f.o.b. Cleveland:

Old Car Axles	$29.25 to $29.75
Cast Borings	10.50 to 11.00
Iron and Steel Turnings and Drillings	13.00 to 13.50
No. 1 Busheling	14.50 to 15.00
No. 1 Railroad Wrought	17.50 to 18.00
No. 1 Cast	18.50 to 19.00
Stove Plate	15.00

Birmingham.

BIRMINGHAM, ALA., March 16, 1907.

Pig Iron.—A large number of those consumers who have, so to speak, been "on the fence" for some weeks, seem to have concluded to avoid the fate of the proverbial owl, and save their necks. The feeling entertained by a great many buyers that the recent lethargic condition of the market would possibly cause the producers to weaken on the price demanded for the last half seems to have been groundless. The producers appear to be confident of their strength, and willing to give the consumers time to realize it. As at other times during recent months, the market is regaining its activity without any break in prices; and, in fact, there appears to be a decided upward tendency. It is estimated that sales aggregating some 80,000 tons have been made in the past two weeks. One purchase by one of the large melters during the present week was 33,000 tons, this having been parceled out among several of the large producers. The price of this purchase could not be learned, though it is not believed to be less than $18.50. Some of the smaller producers are holding firm for $19 for third quarter, though one or two of the large producers have been accepting $18.50 for that delivery. It is stated, however, that one of them has about sold out for that delivery at that price, so it would seem that the bulk of the Iron to be had now for the third quarter would be offered at $19. There have been a few sales for the last quarter, though the quantity sold for that delivery seems to be insignificant, and is confined principally to those desirable brands of Iron which always sell first. For last quarter delivery $18.50 would be readily accepted. The second quarter is so near that it almost places Iron for that delivery on a spot basis, many of the producers having Iron for that period preferring to hold it and sell as spot Iron. The prices now offered for the second quarter would range from $21 to $22.50, depending upon which month the Iron was wanted. Some spot Iron has been sold for $23 and upward, though this was mainly Iron which could be shipped the day ordered, or Iron for special purposes. One interest reports the sale of 1000 tons of special Iron at $25, Birmingham, and another his inability to supply a customer, or find any producer who could supply him 2000 tons at $23. However, ordinary grades for reasonably prompt shipment can be bought for $22.50. There seems to be no prospect of a material increase in producing capacity which would affect the situation to any extent. The only new interest to enter the field reports having already sold two-thirds of its output for the year. One of the large producers in the district, already having one stack out for repairs, has found it necessary to blow out another of the two in operation. Raw materials are still difficult to obtain, due to shortage of labor and of cars, and production is said to be slightly below normal.

Charcoal Iron is very firm at $26.50 to $27, and there is very little to be had at any price.

Coal and Coke.—Foundry Coke is quoted at $4.25, ovens, for the desirable brands, though this price could probably be shaded on a contract for any considerable tonnage. Coal is somewhat easier in price, as is, of course, inevitable with the coming of warmer weather.

Old Material.—The demand for all grades of Cast Scrap continues good, and the stringent conditions surrounding Pig Iron have placed the dealers in this commodity in the position of being unable to supply the demand. Several large dealers are quoting 25c. to 50c. more this week for Cast Scrap. There is a fair demand for all grades of Wrought and Steel Scrap, though prices remain about the same, being approximately as follows, per gross ton, f.o.b. cars here:

Old Iron Rails	$21.00 to $21.50
Old Iron Axles	18.50 to 19.00
Old Steel Axles	16.50 to 17.50
Old Car Wheels	18.50 to 19.00
No. 1 Railroad Wrought	18.00 to 18.50
No. 2 Railroad Wrought	13.50 to 14.00
No. 1 Country Wrought	13.50 to 14.00
No. 2 Country Wrought	12.00 to 12.50
Wrought Pipe and Flues	13.00 to 13.50
Railroad Malleable	13.00 to 13.50
No. 1 Steel	14.00 to 14.50
No. 1 Machinery Cast	15.00 to 15.50
Stove Plate and Light Cast	12.00 to 12.50
Cast Borings	8.00 to 8.50

Cincinnati.

FIFTH AND MAIN STS., March 20, 1907.—(*By Telegraph.*)

Pig Iron.—The business recently transacted has been comparatively light, yet a firm undertone is quite noticeable. Inquiry for prompt and last half delivery has been less active, with business for second quarter brought into some prominence by the fact that one or two concerns have been feeling the market, with a view to purchasing several thousand tons for that delivery. During the past 10 days several adverse influences have been at work to which general conditions have been more or less responsive. Taken as a whole, the flood situation has, perhaps, had more to do with the quiet state of trade in this territory than any other factor, high water having greatly interfered with business throughout the entire Ohio Valley. At least 50 per cent. of consumers along the water front in this city have been forced to shut down from this cause, with the remainder greatly handicapped by the difficulty in securing Coke and Iron. In the South the car situation is said to be somewhat relieved, and furnaces have in most instances been able to ship their current output, although unable to reduce stocks in yards. The large percentage of these shipments, however, is being held south of the river, and has thus far been of minor import in relieving the spot situation. Iron for prompt shipment, if on tracks or in yards here, is still quotable at $23 for No. 2, Birmingham, with last half prices holding strong at $18.50. Northern brands are firm at ruling quotations, with the available supply for last half delivery much restricted. It is said that there has been some figuring done with a view to placing foreign Iron in this city, to come through New Orleans and be delivered in May. It is thought, however, that this will be scarcely feasible, as it is a matter of absolute impossibility to do this at less than Birmingham prices, excepting in cargo lots of 4000 tons, in which event the price would be slightly below Birmingham quotations for the same delivery. Freight rates from the Hanging Rock District to Cincinnati are $1.15, and from Birmingham $3. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$26.50 to $27.00
Southern Coke, No. 2	26.00 to 26.50
Southern Coke, No. 3	25.50 to 26.00
Southern Coke, No. 4	25.00 to 25.50
Southern Coke, No. 1 Soft	26.50 to 27.00
Southern Coke, No. 2 Soft	26.00 to 26.50
Southern Coke, Gray Forge	23.00 to 23.50
Southern Coke, Mottled	22.00 to 22.50
Ohio Silvery, 8 per cent. Silicon	31.15 to 31.65
Lake Superior Coke, No. 1	26.65 to 27.15
Lake Superior Coke, No. 2	26.15 to 26.65
Lake Superior Coke, No. 3	25.65 to 26.15
Car Wheel Irons.	
Standard Southern Car Wheel	$29.00 to $29.50
Lake Superior Car Wheel	27.50 to 28.00

Coke.—The available supply is adequate to care for requirements were it possible to forward shipments promptly. The railroads have been demoralized to a great extent owing to the flood, and it is a difficult matter to secure equipment. We quote the best brands of Connellsville and Virginia Foundry from $3.90 to $4 f.o.b. ovens.

Finished Iron and Steel.—Matters have been somewhat quiet. We quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.93c., half extras, and in smaller lots, 2.10c., full extras; Steel Bars, carload lots, 1.73c., half extras, and in smaller lots, 1.95c., full extras; Base Angles, carload lots, 1.83c.; Beams and Channels, carload lots, 1.83c.; Plates, ¼-in. and heavier, carload lots, 1.83c., and in smaller lots, 2c.; Sheets, No. 16, carload lots, 2.15c., and in smaller lots, 2.70c.; No. 14, carload lots, 2.05c., and in smaller lots, 2.60c.; Steel Tire, 1 x ¼ in. or heavier, 1.93c. in carload lots.

Old Material.—The market has been less active, as a result of the flood conditions. We quote dealers' prices, f.o.b. Cincinnati, as follows:

No. 1 R. R. Wrought, net ton	$18.50 to $19.00
Cast Borings, net ton	10.00 to 10.50
Steel Turnings, net ton	12.00 to 13.00
No. 1 Cast Scrap, net ton	18.00 to 18.50
Old Iron Axles, net ton	26.75 to 27.75
Old Iron Rails, gross ton	27.00 to 27.50
Old Steel Rails, long, gross ton	19.25 to 20.25
Relaying Rails, 56 lb. and up, gross ton	28.75 to 29.75
Old Car Wheels, gross ton	24.00 to 25.00
Low Phosphorus Scrap, gross ton	21.25 to 21.75

William G. Eaton, who has been connected for a number of years with the firm of Hickman, Williams & Co., has withdrawn and formed a new partnership under the name of Eaton, Rhodes & Co., handling Pig Iron and Coke. Temporary quarters have been secured at 1605 First National Bank Building, Cincinnati, which will be changed to 1509 in the same building as soon as the work of remodeling is completed.

Hamilton Furnace at Hanging Rock, Ohio, blew out on Friday for relining and repairs, to resume operations some time during May.

Woodstock Furnace, Woodstock, Ala., was blown in today, after having been out of blast for some weeks. Rogers, Brown & Co. handle the output of this furnace.

Ray Fox, for several years connected with the Columbus Iron & Steel Company, Columbus, Ohio, as sales agent, has resigned and become connected with Hickman, Williams & Co. of this city in the same capacity. This change is effective April 1.

New York.

NEW YORK, March 20, 1907.

Pig Iron.—From time to time quite a sharp demand for spot Foundry Iron makes its appearance. Some important interests have made purchases for forward delivery. Among them is one which has taken 3000 tons for the second half, while another has bought about 10,000 tons for the second and third quarter. At least a part of the 12,000 tons required by a leading electrical company has been placed in Buffalo, and the balance is expected to go to the same district. We quote: Spot Northern Iron, in small lots, $25.50 to $26.50 for No. 1 Foundry, and $24.50 to $25 for No. 2 Foundry. For the second quarter we quote $25 to $26 for No. 1 Foundry, $23.50 to $24 for No. 2 Foundry and $23 to $23.50 for No. 2 Plain, tidewater. For the second half we quote $23 to $23.50 for No. 2 Foundry.

Steel Rails.—The sale of 9000 tons of Rails to the Texas Traction Company is the principal transaction reported for the past week, though a number of roads are negotiating. The Nevada Northern bought 3000 tons, and orders for various tonnages less than 1000 tons amount to about 5000 tons. Thus far the amount of business placed since January 1 has not equaled the amount entered in 1906 up to the same date, though there was a larger tonnage on the books at the beginning of the year than at the opening of 1906.

Structural Material.—The competition for Structural work has been sharp since the beginning of the year, and recent bids on railroad work in particular have shown that the fabricating companies are divided into two classes, the one willing to make a low bid to get work, and the other willing to take the work if it can get its price. The addition of a Steel company to the ranks of bidders for Structural work, a company that only at considerable intervals goes after contracts with a determined purpose to land the business, has been noticed lately. In bridge work the principal new business is the addition of about 6000 tons to the Harriman roads' contract, this being for the Illinois Central. Of the recently reported addition to the New Haven road's Harlem River bridge contracts, two truss bridges, 900 tons, went to the Fort Pitt Bridge Company, and the girder bridges, 2700 tons, were taken by the Pennsylvania Steel Company. Lewis F. Shoemaker & Co., Philadelphia, have taken the erection of extensions to three power houses of the Boston Elevated, calling for 1500 tons of Steel. Some inquiries for manufacturing buildings have come in this week, and one contract is reported—600 tons for the Didier-March Company's new construction at Keasby, N. J. The Thomson-Starrett Company has the contract for the Frankel loft building, at Dutch and John streets, New York, and the American Bridge Company will furnish the Steel. The latter company has just taken the contract for the Spreckels Building at San Francisco, about 1500 tons. Some further construction for Steel corporation subsidiary companies is also coming up, including additions at Waukegan, Ill., and in the Cleveland District for the American Steel & Wire Company. The German-American Fire Insurance Company Building in New York is still pending, and for the Boehn-Kuhn Building new bids will be submitted. The Boston & Maine has asked bids on five small bridges, and the Central of New Jersey will be in the market for a number of bridges in addition to the 800 tons awarded last week to the McClintic-Marshall Construction Company. We quote as follows on Structural Steel, mill shipments, for delivery at tidewater: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. On Beams 18 to 24 in. and Angles over 6 in. the extra is 0.10c. Sales are made out of stock of material cut to length at 2¼c. to 2½c.

Bars.—The condition of business in Bar Iron is excellent, inquiries being fairly numerous, and some good contracts have been placed. Prices are firm on the basis of 1.90c. to 1.95c., tidewater. Steel Bars are also in good demand, with some contracting for fairly large quantities for concrete reinforcement. The demand from concrete interests is not exclusively for Steel Bars, as some Iron Bars are also being purchased for this class of work. Prices are continued at 1.84½c. to 1.94½c., tidewater, for Steel Bars, according to specifications and time of delivery.

Plates.—Small lots only are now called for by local consumers. Inquiries for large quantities have been lacking for some considerable time. The Eastern mills are showing a disposition to recede from the extreme prices which they have recently been quoting, as one or two mills now name 2.04½c., tidewater, for early delivery. The full range, taking the low price for future deliveries made by Western mills and the rate named by some of the Eastern mills, is as follows, tidewater: Sheared Tank Plates, 1.84½c. to 2.14½c.; Flange Plates, 1.94½c. to 2.24½c.; Marine Plates, 2.24½c. to 2.44½c.; Firebox Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—The city of Reading is in the market for about 1250 tons of Water Pipe. Boston is also expected to ask for bids shortly for possibly 8000 tons of Water Pipe. The two or three days of fine weather enjoyed last week brought out a flood of inquiries, but the recurrence of inclement weather has apparently checked the disposition in the general trade to purchase. Foundries, however, are well filled on both large and small Pipe, and it now looks as if prices would be higher rather than lower. Orders are coming quite freely to those who have heretofore been quoting outside prices. Carload lots of 6-in., at tidewater, are quoted at $35.50 to $36 per net ton, while some of the manufacturers' name these rates at their foundries.

Old Material.—The demand continues urgent for Heavy Melting Steel Scrap, Cast Borings, Heavy Steel Turnings, Heavy Cast Scrap, Car Wheels and Stove Plate. Very small quantities of these grades are available for immediate shipment, the demand apparently being greater than the supply. Ordinarily Borings and Turnings might be expected to become more plentiful, but as these are now being freely used in Open Hearth Steel furnaces the accumulations are kept down. The rolling mills are taking some classes of Busheling Scrap in good quantities and at full prices, but are not so anxious regarding the dearer grades. Nevertheless offerings of Wrought Scrap by railroads have been absorbed in good quantities, considerably better than had been expected. While some dealers are of the opinion that the fall in railroad securities must eventually affect business, others are sanguine that a good trade can be expected for at least six months. They point to the urgent demand from many consumers for the immediate shipment of Old Material purchased, showing that they are actually short of stock, and believe that trade is, on the whole, in better condition than for some months. Quotations per gross ton, f.o.b. New York, are as follows:

Old Girder and T-Rails for Melting	$16.25 to $16.75
Heavy Melting Steel Scrap	16.25 to 16.75
Old Steel Rails, rerolling lengths	18.50 to 19.50
Relaying Rails	28.00 to 29.00
Old Iron Rails	24.00 to 25.00
Standard Hammered Iron Car Axles	28.50 to 29.00
Old Steel Car Axles	20.50 to 21.00
No. 1 Railroad Wrought	20.00 to 20.50
Iron Track Scrap	18.00 to 18.50
No. 1 Yard Wrought, long	18.00 to 18.50
No. 1 Yard Wrought, short	17.50 to 18.00
Wrought Pipe	14.50 to 15.00
Light Iron	11.00 to 11.50
Cast Borings	12.50 to 13.00
Wrought Turnings	14.50 to 15.00
Old Car Wheels	22.50 to 23.00
No. 1 Heavy Cast, broken up	19.00 to 20.00
Stove Plate	16.00 to 16.50
Grate Bars	14.00 to 14.50
Malleable Cast	19.00 to 19.50

Leonard Joseph, formerly vice-president of the Joseph Joseph & Brothers Company and the Railway Supply Mfg.

Company, and who for the past three years has been traveling, has again embarked in business, having opened an office at 96 Broadway, New York, for the purchase and sale of Scrap and general Railroad Supplies.

Metal Market.

NEW YORK, March 20, 1907.

Pig Tin.—The sharpest and most extensive decline of the year has occurred this week, and to-day Tin reached the lowest figure of the year, at 40.65c. The market has been a reactionary one during the entire week, as on the 14th sales were made at 42.05c., declining on the 15th to 41.75c., and on the 18th to 41.65c., and on the 19th a further decline was witnessed, to 41.10c. This is ascribed in no small part to the lack of demand in this country, but abroad it is stated that some long Tin has been liquidated, the reasons given for this being not only that it was a propitious time, but that the money situation was demanding more and more attention. Several of the prominent London houses are given as sellers under the decline. It has been remarked on more than one occasion that the market this year had been unusually steady, the highest figure reached being on February 6, when Tin was sold at 42.50c. One reason for the dull business is undoubtedly the fact that consumers are very reluctant to make large commitments, as is illustrated by the fact that those in the habit of buying 15 tons at a time are now buying but 5 tons. The London market showed a heavy decline this morning, dropping to £184 15s. for spot and £183 10s. for futures, a decline of practically £6 since the week previous. A later cable noted a sharp recovery, the market closing at £186 for spot and £183 15s. for futures on a large volume of business. The statistical position grows worse instead of better, as the shipments from the Straits for the first half of March were 2536 tons, against 1506 tons during the corresponding period last year. The total arrivals so far this month at American ports have been 3295 tons, and there are afloat 3075 tons, of which about 1100 tons will make this month's delivery.

Copper.—It can hardly be said that Copper is weaker, as sales, particularly of small lots, continue to be made at full prices. There is no doubt, however, that the market is not as strong, and whether this is a purely sentimental effect caused by an unsettled financial situation or a belief that the decline in the market is to come rather sooner than expected is hard to state. Sufficient to say, however, the London market shows a decline of about £4 for spot and futures, while Best Selected is but £1 10s. off from the high price of last week. It is, of course, well understood that Standard Warrants denote more of speculation in futures than actual business in the refined metal; consequently the weakening of Warrants beyond that of Best Selected, which denotes refined metal, shows the soundness of trade. To-day's London prices are £105 10s. for spot, £106 12s. 6d. for futures, Best Selected being quoted at £116 10s. Quotations are slightly easier for nearby shipment, Lake being quoted at 25.50c. to 25.75c., Electrolytic at 25.37½c. to 25.62½c. and Casting Grades at 24.87½c. to 25.12½c. Prompt deliveries would command premiums over these prices, as they have done in the past, and for small lots of Lake 26.50c. to 27c. is quoted, while for cask lots of Electrolytic 26.25c. to 26.50c. is quoted. The exports so far this month are small, aggregating 8417 tons.

Pig Lead.—Spot stocks can be obtained at around 6.30c. New York, but shipments from the West continue unchanged on a basis of 6.25c. New York. In St. Louis the price is also unchanged at 6.10c. Considerable business has been done during the week at about this range of prices. The London market shows a slight decline, closing at £19 15s. 9d. The American Smelting & Refining Company continues to accept orders only at the price current on date of shipment.

Spelter.—The market is quiet and dull, but prices are very firm. In St. Louis 6.80c. is asked, but it is barely possible that a bid a shade under this price might be acceptable to sellers. In New York Spelter is held at 6.95c.

Antimony.—It is said that the metal is practically unsalable, and there is some difficulty in getting quotations from dealers, as none of them wish to make a market. Undoubtedly the decline will be overdone for the time being, but sufficient to say that some extremely low quotations have been made for import orders. Cookson's could undoubtedly be had in small lots at 25c.; Hallett's at 23c., and other brands at 22c. to 23c.

Tin Plates.—The Tin Plate demand is excellent, but it is so far overshadowed by the enormous pressure for Sheets that in the heavy rush of business the former receives but scant attention. Prices continue to be firmly held at $3.90, f.o.b. Pittsburgh, and $4.09, f.o.b. New York, for 100 lb. IC Coke Plates. The independent interests, which are in a position to make prompt delivery, can secure premiums for so doing, and for the last half delivery 10c. per box above these prices is readily obtained. The weakening of the market for Pig Tin, however, may operate against any further advance during the latter months of the year. The London market has advanced 1½d., and is now 14s. 10½d.

Old Metals.—Dealers' selling prices are unchanged from those of a week ago:

	Cents.
Copper, Heavy Cut and Crucible	23.75 to 24.75
Copper, Heavy and Wire	23.00 to 24.00
Copper, Light and Bottoms	21.50 to 22.50
Brass, Heavy	16.75 to 17.50
Brass, Light	13.75 to 14.50
Heavy Machine Composition	21.75 to 22.50
Clean Brass Turnings	15.25 to 16.00
Composition Turnings	18.25 to 19.00
Lead, Heavy	6.00
Tea Lead	5.70
Zinc Scrap	5.00

Iron and Industrial Stocks.

NEW YORK, March 20, 1907.

The stock market collapsed on Thursday when lower prices were made on many stocks than had been quoted for a number of years. The collapse was attended with panicky conditions, and securities were sacrificed without regard to value. The occurrence has been named the "silent panic," as it had been preceded by no financial disturbance or other happening which would indicate the possibility of such a serious disturbance of confidence. It is generally attributed to an adroit combination of operators interested in depressing prices, who took advantage of a psychological moment when the public had been deeply stirred over railroad disclosures. Some recovery took place on Friday, and quite a rapid rise occurred on Saturday and Monday. On Tuesday, however, another decline set in, but this did not force prices to the low level of Thursday. The following range of prices shows the lowest price named on active stocks on Thursday and the highest price realized in the recovery of Saturday and Monday: United States Steel common, 33 to 39⅛, preferred, 95½ to 102¼; Car & Foundry common, 32½ to 38½, preferred, 97½ to 98; Locomotive common, 58½ to 67½; Steel Foundries preferred, 34 to 39; Cambria Steel, 32¾ to 40⅜; Colorado Fuel 29 to 37¼; Crucible Steel preferred, 69¾ to 74⅛; Pressed Steel common, 31½ to 38, preferred, 89 to 93; Railway Spring common, 41 to 49½; Republic common, 23 to 28, preferred, 79½ to 87½; Sloss-Sheffield common, 42 to 59; Tennessee Coal, 134 to 139; Cast Iron Pipe common, 33 to 37¾, preferred, 78½ to 85⅞; Can preferred, 49 to 51¾, ex. dividend. The market is still depressed. Last transactions up to 1.30 p. m. to-day are reported at the following prices: United States Steel common, 36⅞, preferred, 99⅞; Car & Foundry common, 36, preferred, 97½; Locomotive common, 64, preferred, 106; Steel Foundries common, 7¼, preferred, 38; Colorado Fuel, 35; Pressed Steel common, 35¼, preferred, 93; Railway Spring common, 45⅝; Republic common, 27¼, preferred, 85; Sloss-Sheffield common, 53; Tennessee Coal, 136½; Cast Iron Pipe common, 36, preferred, 81; Can common, 5½, preferred, 51¾.

The official statement of the business of the Crucible Steel Company of America for the six months ending February 28, 1907, is as follows:

Total net earnings after deducting all expenditures for repairs, interest on mortgages, &c.		$1,283,589.10
Less amount set aside as reserve for contingencies.		25,671.78
Balance of net earnings		$1,257,917.32
Dividends on preferred stock:		
No. 17, 1½ per cent., to November 30 1906	$366,547.50	
No. 18, 1½ per cent., to February 28, 1907	366,547.50	
		733,095.00
Surplus for the half year		$524,822.32

Dividends.—The Crucible Steel Company of America, Pittsburgh, Pa., has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable April 20.

The American Nut & Bolt Fastener Company, Pittsburgh, has declared a quarterly dividend of 5 per cent. and an extra dividend of 5 per cent., payable March 20.

The International Nickel Company has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable May 1.

The Sloss-Sheffield Steel & Iron Company held its annual meeting March 13, at which the Board of Directors was reduced from 15 to 12 members. The directors who were not re-elected were Robert B. Van Cortlandt, Moses Taylor and W. G. Oakman. These gentlemen are now connected with the Southern Steel Company, which is a competitor of the Sloss-Sheffield Company.

The new wire mill of the Shenandoah Steel Wire Company, Buffalo, N. Y., will be started on regular production March 25, with a large amount of business booked ahead.

OBITUARY.

JAMES M. MCCUNE, for nearly half a century a prominent hardware merchant of Columbus, Ohio, died from pneumonia March 4, aged 85 years. He had been at different times a member of various hardware firms. He retired in 1890.

JOSEPH A. BALDWIN, a pioneer in the sewer pipe industry, died at Akron, Ohio, March 9, aged 86 years. He was president of the Summit Sewer Pipe Company and had been secretary and general manager of the Buckeye Sewer Pipe Company since its organization in 1872.

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ARTHUR D. NEWTON, manager of the Boston branch of the electrical department of the Johns-Manville Company, died at Washington, March 13, while on his way to the South to recuperate after an illness. He was 43 years of age. He was born in Hartford, Conn. He was for a time with the Eddy Electric Mfg. Company, Windsor, Conn., and later with the Electric Vehicle Company, Hartford, as its treasurer. About two years ago he went with the Johns-Manville Company. He leaves a widow and one son.

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HENRY A. TILLINGHAST, secretary-treasurer of the Textile Finishing Machine Company, Providence, R. I., died suddenly March 18. He was born in Providence in 1860 and after graduating from Brown University in 1882 entered the employ of the Granger Foundry & Machine Company. He was made secretary of the corporation in 1887 and treasurer in 1897. Upon the merging of the business in the Textile Finishing Machine Company, in 1902, he was elected to the offices which he held at the time of his death. He leaves a widow and two children.

Moose Mountain Ore.—The iron ore handbook of Oglebay, Norton & Co., Cleveland, O., for 1907 includes, in addition to the old range Lake Superior ores this firm has handled heretofore, Moose Mountain magnetite, from the property 18 miles north of Sudbury, Ont., in which the Gates-Lambert party have a controlling interest. The ore is crushed to 1-in. size and the guarantee in iron, natural, is 54 per cent., or 55 per cent. dried at 212 degrees, the ores containing 2.60 per cent. moisture. The analysis shows 0.10 phosphorus, 13.19 silica, 0.02 manganese, 1.21 alumina, 3.60 lime, 3.15 magnesia, 0.011 sulphur and no titanium.

PERSONAL.

Elbert H. Gary is now chairman of both the Board of Directors and the Finance Committee of the United States Steel Corporation. He was made chairman of the Finance Committee at a meeting of the Board of Directors last month, succeeding George W. Perkins, who, however, continues as a member of the committee.

Joseph Wharton, president of the American Iron and Steel Association, Philadelphia, completed his eighty-first year March 3. Mr. Wharton is a splendid example of the octogenarian in active business, prosecuting great enterprises despite his age.

George Burnham, Sr., head of the firm of Burnham, Williams & Co., proprietors of the Baldwin Locomotive Works, Philadelphia, celebrated his ninetieth birthday March 11.

J. F. W. Bunsen has entered the employ of Muralt & Co., engineers and contractors, New York, and will take the management of their Southern office in Charleston, S. C. He will have charge of the firm's various projects in the Southern States, and especially the large power plant which it is now building for the United States Government at the Charleston Navy Yard.

Ilmer & Co., composed of Louis Ilmer, Jr., and Walter Bohrer, have opened an office at 310 Fourth National Bank Building, Cincinnati, Ohio, as gas engine experts, specializing in oil engine and high powered gas engine design.

Lewis H. Morgan has resigned as general manager of the Ridgway Machine Tool Company, Ridgway, Pa., and will retire from the machine tool business. This is the plant which was recently taken over by the Niles-Bement-Pond Company. Mr. Morgan has purchased a plantation near Richmond, Va., where he will go for a much needed rest.

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George Beals, manager of the Buffalo sales office of the Jones & Laughlin Steel Company, Pittsburgh, has resigned, and on April 1 will be succeeded by C. H. Bradley, assistant manager of the company's New York office.

Labor Notes.

The bimonthly adjustment of wages of tin plate workers employed in the tin plate mills that signed the Amalgamated Association scale was made in Pittsburgh last week, and it was found that the average price on shipments of tin plate in January and February was above $3.60 per base box, this entitling the men to an advance of 2 per cent. in wages. The men received a similar advance early in January. The tin plate scale is based on the selling price of coke plates at $3.40 per box of 100 lb., and an advance of 2 per cent. in wages is made for each increase of 10 cents per base box in the selling price. It was found that the average price of shipments of sheets in January and February did not entitle the men to any advance in wages for March and April, and the same was true of bar iron. Following its usual custom, the American Sheet & Tin Plate Company will give employees in its nonunion tin plate mills an advance of 2 per cent., corresponding with the advance in mills for which the Amalgamated scale is signed.

On account of a strike of the laborers employed in the plants of the Republic Iron & Steel Company and the Interstate Iron & Steel Company at East Chicago, Ind., both plants were compelled to shut down on Tuesday. The strike was started because of the refusal of an advance in wages from $1.50 to $1.75 a day. It is expected that the difficulty will be quickly adjusted, and no protracted delay in starting the plants is anticipated.

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The annual report of the Cambria Steel Company, Philadelphia, has been issued, covering the year ending December 31, 1906. The income account compares as follows with the preceding year:

	1906.	1905.
Net earnings from operations	$4,897,704.03	$4,100,183.49
Rents, income from investments and interest	510,971.40	343,627.91
Totals	$5,408,675.43	$4,443,811.40
Fixed charges, interest on term notes and incidentals	444,672.28	443,475.57
Net income	$4,964,003.15	$4,000,335.83
Which has been appropriated as follows:		
Dividends	$1,350,000.00	$1,350,000.00
Set aside to betterment and improvement account	3,000,000.00	2,000,000.00
Set aside to general depreciation fund	550,000.00	550,000.00
Balance carried to profit and loss	$64,003.15	$100,335.83
The profit and loss account, December 30 previous	2,278,709.87	2,223,911.01
Totals	$2,342,713.02	$2,324,246.84
Bad or doubtful accounts charged off	14,514.39	45,536.97
Balance to credit of profit and loss December 31	$2,357,227.41	$2,278,709.97

The general balance sheet shows the following condition of the company:

Assets.

Property, works, coal and ore lands, &c., subject to payment of $338,720 annual rental, under Cambria Iron Company lease for 999 years, being 4 per cent. on $8,468,000 Cambria Iron Company's stock		$33,090,304.68
Plant additions to December 30, 1905	$7,027,783.30	
Plant additions year ending December 31, 1906	2,289,696.08	9,317,479.38
Total		$42,407,784.06
Equipment additions		728,168.29
Real estate, titles in Cambria Steel Company		298,808.38
Sundry securities, principally stock in ore and steamship companies		1,515,563.00
Inventory account—Materials, supplies and products		7,983,108.55
Special deposits	$1,250,000.00	
Cash	692,653.84	
		1,942,653.84
Accounts receivable		4,311,205.64
Bills receivable		285,100.19
Total		$59,472,391.95

Liabilities.

*Capital stock	$45,000,000.00
General depreciation fund	2,650,000.00
Betterment and improvement fund	7,000,000.00
Accounts payable, including dividend No. 11, $675,000	2,465,164.54
Profit and loss account	2,357,227.41
Total	$59,472,391.95

* The authorized capital stock named in charter is $50,000,000, of which $45,000,000 has been issued. The remaining $5,000,000 of stock is unissued, and can only be issued at not less than par.

The last of the $3,500,000 term notes issued December 15, 1900, were paid on December 15, 1906.

From the accompanying statement, signed by President Powell Stackhouse and Chairman E. B. Morris of the Executive Committee, the following extracts are taken:

"The coal, iron ore and limestone properties owned, produced satisfactory results. Your company is fortunate in controlling so large a proportion of the raw materials consumed in your operations, but, as favorable opportunities offer, the quantities of these base supplies should be further supplemented, thus recognizing your corporate obligations to the future. Explorations for ore are being continued on a large body of land in Michigan held under option. Your Penn Iron Mining Company shipped from its mines on the Menominee Range, Michigan, 497,350 tons of iron ore for use at your works. The Republic Iron Company of Michigan, of which you own over 99½ per cent. of the capital stock, shipped from its mines in the Marquette district, Michigan, 181,031 tons of iron ore, about 132,000 tons for your use, the remainder having been sold. The Mahoning Ore & Steel Company, Minnesota, of which you own 50 per cent. of the capital stock, produced, on account of your one-half interest, 608,374 tons iron ore in 1906; its annual output can be increased, when required, and its ore reserves are ample to supply you with this class of ores for a very long term of years.

"*Cambria Plant.*—Expenditures aggregating a large sum have been made for minor betterments and remodeling to what is known as your original, or Cambria plant, the chief of which is the replacement of your old and inadequate machine shop with an enlarged fireproof building, with modern tools. This is expected to be fully completed within this year. Steel stock handling bins for No. 5 and 6 blast furnaces were authorized and are under construction.

"*Gautier Plant.*—The 24-in. universal plate mill under construction at date of last report was turned over to the operating department in May last, and has produced the expected results. A 22-in. plate and breakdown mill is now building. The temporary wooden buildings erected over these mills after the flood of 1889, having become dangerous and needing expensive repairs, are being replaced by steel construction, eliminating one of your most serious fire risks.

"*Franklin Plant.*—The work that has been carried on during the year has been in the direction of the completion of the plant in accordance with the plans contemplated when originally designed. The seventh battery of 56 Otto-Hoffman coke ovens is now producing coke; the eighth battery, 56 ovens, is being dried out and will be making coke about April 1. No. 8 blast furnace, an important addition to your plant, was authorized March 13, 1906, and is now under construction. A 200 ton hot metal receiver and two additional 50 ton open hearth furnaces (Nos. 16 and 17) are now under construction. Additions will be required to your bloom and billet mill before your steel making plant can be further increased.

"*Car Shop.*—Considerable additions were made in 1906 and are now in progress, all of which should be completed within the first half of 1907.

"*Improvements.*—There was expended for improvements $2,385,840.98; of this amount $2,289,696.08 was charged to plant additions, and the remainder, $96,144.90, was repaid by amount realized from sales in 1906 of real estate and minerals, under terms of your lease from Cambria Iron Company. There was expended, in addition, $337,490.42 for replacements and alterations, and charged to operating accounts. Further considerable additions are required to your plant, which will be made as rapidly as conditions justify; with a continuance of present business it is hoped that the cost may be met from earnings in excess of the usual dividends.

"*Manufacturers' Water Company.*—This corporation, of which you control the entire capital stock, provides the water supply for your works; your use during 1906 averaged 71,000,000 gals. daily. No construction work has been done on the Quemahoning dam and pipe line, but all the property within the limits of the proposed dam has been purchased. The authorization and commencement of construction should not be long delayed.

"Shipments of steel show an increase of 11 9-10 per cent. in quantity, and the gross value of all products shipped 25 6-10 per cent. over the preceding year, which was your previous maximum year. Your mills and shops have been fully supplied with orders, and the volume of business has been satisfactory; you have suffered, as have all other industrial corporations, by the scarcity of properly skilled labor. The continued advance in the value of your supplies of all materials, and the expansion of your business in tonnage and amount involved, demand a constantly increasing working capital, reducing your cash reserves."

Soho Furnace of the Jones & Laughlin Steel Company, Pittsburgh, has been blown out for relining and general repairs. This furnace has been in continuous blast for nearly five years, with only slight repairs made in that time, and turned out 411,381 gross tons of low silicon, Bessemer and basic iron, the larger part of the output having been basic iron.

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"*Car Shop.*—Considerable additions were made in 1906 and are now in progress, all of which should be completed within the first half of 1907.

"*Improvements.*—There was expended for improvements $2,385,840.98; of this amount $2,289,696.08 was charged to plant additions, and the remainder, $96,144.90, was repaid by amount realized from sales in 1906 of real estate and minerals, under terms of your lease from Cambria Iron Company. There was expended, in addition, $337,490.42 for replacements and alterations, and charged to operating accounts. Further considerable additions are required to your plant, which will be made as rapidly as conditions justify; with a continuance of present business it is hoped that the cost may be met from earnings in excess of the usual dividends.

"*Manufacturers' Water Company.*—This corporation, of which you control the entire capital stock, provides the water supply for your works; your use during 1906 averaged 71,000,000 gals. daily. No construction work has been done on the Quemahoning dam and pipe line, but all the property within the limits of the proposed dam has been purchased. The authorization and commencement of construction should not be long delayed.

"Shipments of steel show an increase of 11 9-10 per cent. in quantity, and the gross value of all products shipped 25 6-10 per cent. over the preceding year, which was your previous maximum year. Your mills and shops have been fully supplied with orders, and the volume of business has been satisfactory; you have suffered, as have all other industrial corporations, by the scarcity of properly skilled labor. The continued advance in the value of your supplies of all materials, and the expansion of your business in tonnage and amount involved, demand a constantly increasing working capital, reducing your cash reserves."

Soho Furnace of the Jones & Laughlin Steel Company, Pittsburgh, has been blown out for relining and general repairs. This furnace has been in continuous blast for nearly five years, with only slight repairs made in that time, and turned out 411,381 gross tons of low silicon, Bessemer and basic iron, the larger part of the output having been basic iron.

The Machinery Trade.

NEW YORK, March 20, 1907.

The volume of business transacted the past week was equal to that of the previous weeks, with little variation in character. The railroads have not yet come into the market, but mining companies are buying heavily, and these latter are expected to be important factors in the trade for some time, especially that branch which deals in drills, power equipment, &c. Deliveries continue to be a thorn in the side of the dealer in this section, and because of the impossibility to get reasonable delivery much business is lost, at least for the present. Almost every week something comes to light to show the large demand and the eagerness on the part of buyers to secure machinery at the earliest time. Recently several orders for large machines were canceled, but were replaced with the same manufacturer after a few days of shopping around by the purchaser.

The spring meeting of the National Machine Tool Builders' Association will be held on Tuesday and Wednesday, May 14 and 15, instead of on May 7 and 8, as was planned. The place will be the Chamberlain Hotel, Old Point Comfort, Va., which is directly across the river from the grounds of the Jamestown Exposition, which are easily reached by ferry. This postponement of the date of the meeting will be appreciated by many of the machinery trade who are planning to attend the concurrent meetings of the American Supply and Machinery Manufacturers' Association, the National Supply and Machinery Dealers' Association and the Southern Supply and Machinery Dealers' Association, which are to be held May 8, 9 and 10 at Cincinnati, Ohio, as it will give those who desire an opportunity to attend both of the conventions.

Norfolk & Western Railroad's Improvements.

Extensive improvements are to be made to the shop facilities of the Norfolk & Western Railroad, which, with the work now under way, will call for the expenditure of over $800,000. Over half of this amount is to be spent in the erection and equipment of shops at Roanoke, Va., and about $200,000 is to be used in the purchase of new machinery and tools. At Roanoke the company has under construction a new brick foundry building, 140 x 740 ft., with steel roof, which is to be equipped with traveling cranes, &c., to cost when completed $365,000; brick planing mill, with steel roof, 94 x 254 ft., to cost $40,000, and a storage warehouse, 139 x 544 ft., to cost $13,000. The new buildings planned for that point, construction of which has not yet been started, include a cab shop, 75 x 200 ft., extension to smith shop, extension to boiler and flue shops and wheel mounting shop with cranes and tracks. The aggregate cost of this latter group of buildings will be $79,500. These buildings will be equipped with new machinery and tools at an aggregate cost of $132,750. At the West Roanoke yard the company has arranged for repair shops and tracks to cost $40,000; at the yards at Williamson, W. Va., a lighting plant will be installed to cost $9500; at Ecklan, W. Va., a roundhouse will be built at a cost of $50,000, and at East Portsmouth, Ohio, the boiler house will be extended at a cost of $40,000. At Claire, Ohio, a small engine house and storage building will be constructed at a cost of $7500. Tools and other equipment for the division shops will be purchased at an estimated cost of $65,164. The trade has been keeping in close touch with the Norfolk & Western Railroad for some time, and it is expected now that the plans have been completed the company will come into the market for the necessary mechanical equipment. N. D. Maher, Roanoke, Va., is general manager.

The purchasing department of the Pennsylvania Railroad is making inquiries for the following tools: One pneumatic double-cylinder flue welder, with dies, mandrels and swedging dies for tubes, 2, 2½, 3, 3½, and 4 in. in diameter; one flue welding oil furnace for 2 to 4 in. flues; one inside molding machine to work material from ⅜ to 5 in. in thickness and up to 10 in. wide, bidder to state size of motor to run machine; one plate roll to handle plates 10 ft. wide, ¾ in. thick, driven by direct connected 110 volt Westinghouse motor; one two-spindle solid die bolt cutter for ⅛ to ⅝ in. bolts, driven by Westinghouse 110 volt motor; one oil furnace for heating rivets; one engine lathe, 27-in. swing, distance between centers 10 ft., taper attachment, driven by Westinghouse 110 volt motor; one engine lathe, 36-in. swing, distance between centers 16 ft., taper attachment, driven by Westinghouse 110 volt motor. Bids are now being received upon one 20-ton steam operated and self-propelled locomotive crane suitable for operation on standard gauge track; the crane to be equipped with steel house, gear cases, hook block, and other attachments necessary for handling material around shops. It is to be equipped with M. C. B. couplers, located at standard hight on four-wheel truck. Quotation for the same equipment with two four-wheel trucks and heavy framing suitable for handling in trains is included. Bids should be accompanied by drawings, photographs and specifications, giving size, capacity and description of machine, price not to include ballast or counterweight.

At a recent meeting of the directors of the Central of Georgia Railroad arrangements were completed to enlarge its present shops at Macon, Ga. New buildings are to be erected and equipment installed at a cost of $1,000,000. The company has had under consideration for some time the erection of new shops at that point, but only recently was it enabled to secure the land it desired for these improvements. The plans call for new buildings which will be several times the size of the present ones and which will be equipped with modern machinery.

The Mesta Machine Company, Pittsburgh, Pa., has plans for about doubling its extensive plant at West Homestead, and work has already been begun on the proposed addition, which will include a structure 170 x 820 ft. This building will be used almost entirely for foundry purposes and it will be equipped, among other things, with eight large furnaces and two cupolas. There will be an 80-ft. yard alongside the building, which is to be equipped with heavy electric traveling cranes for handling the company's output. The company will, it is understood, enlarge its machine shop facilities materially and will make some additions to its present equipment with a view to increasing its facilites generally for the constructon of its line of engines, rolling mill equipment and heavy castings. The present foundry, it is understood, will be moved into the new structure, and that section of the building will be used for enlarging the machine shop, pattern shop and other departments of the plant. The company will make its own engines for the added power equipment, it is understood, and other details of equipment are being arranged at the Pittsburgh office. It is hoped to have the improvements completed and the plant addition in operation before the summer is over.

An idea of the recent growth of the General Electric Company, Schenectady, N. Y., and something of an estimate of the company's future machinery needs for its plant to be erected on the site at Erie, Pa., the purchase of which was mentioned here last week, is contained in the following extract from an official announcement made by the company regarding its Erie purchase. "The growth of the business makes necessary the provision each year of a large amount of manufacturing floor space and equipment, and it is for this purpose that the site at Erie is to be acquired. The present rate of growth of the business of the General Electric Company requires the provision of additional manufacturing facilities each year, corresponding with the employment of between 4000 and 5000 additional employees." The company further states that it does not intend to abandon any of its present plants or to divert to Erie any considerable portion of the work now being done at the several points at which the company has factories. The further statement that work on the principal manufacturing buildings at Erie will be begun during the coming summer lends color to the assumption that in a short time the trade will hear of machinery purchases.

We are informed that the plant which the F. H. Ogden Company, engineer, 15 Clinton street, Newark, N. J., will erect on the Newark Meadows for the manufacture of small and medium sized gray iron castings, is to be owned by the Universal Caster & Foundry Company, 1170 Broadway, New York, which now operates a plant at 108 Adams street, Newark. The company intends to manufacture castings for the trade and to increase its own output of piano hardware, furniture casters, outlet boxes, and other lines of high grade small castings. The power house equipment will consist of 400 hp. of boilers, 250 hp. engine, 125-kw. generator, 12 or 14 motors, ranging from 6 to 40 hp.; air compressors, air lifts, tumbling barrels, cupola, annealing and core ovens, and everything that goes to make a first-class plant of the kind. All of the purchasing will be done by the F. H. Ogden Company, who will have entire charge of the construction and equipment of the plant.

W. H. Woodcock, 506-510 White Building, Buffalo, N. Y., has inquiries in the market for two air compressors, one to have a capacity of 750 cu. ft. per minute, and the other 900 cu. ft. per minute, to be operated at 100-lb. pressure.

There are some inquiries in the market to indicate that the American Valve Company, Coxsackie, N. Y., may soon make some purchases for a machine shop, which is to be built in the spring. The building will be two stories in hight and 40 x 150 ft. The equipment will consist principally, it is stated, of turret lathes for the manufacture of valves.

Property has been purchased at Highlandtown, a suburb of Baltimore, Md., by the Southern Turpentine Company, 82 Wall street, New York, for the erection of a turpentine plant to cost $50,000 or more. It is expected that plans for the proposed plant will be completed in about two weeks, and bids will be received on the construction of the buildings and the equipment both at the company's New York office and at its office at 62 Hanover Building, Baltimore, Md.

Bids will be received at the office of the Department of

Correction, New York, March 28, for installing a complete electric lighting plant, covering all of the buildings comprising the workhouse at Blackwell's Island.

The Manhattan Screw & Stamping Company, New York, whose plant at Seventh avenue and Eleventh street was recently destroyed by fire, has purchased a six-story factory building, 100 x 125 ft., at West End avenue and Sixty-seventh street, and the company is now making alterations and getting its equipment together with a view to the resumption of manufacturing as soon as possible.

The Rapid Transit Commission, New York, will receive bids until April 11 for the construction of the first section of the subway loops between the bridges. The subway to be built under this contract is to extend under Centre street from Canal to Pearl, with spurs into Walker and Canal streets.

Bids for the first section of the work in connection with the Catskill Aqueduct were opened March 19. The section for which bids were asked extends 10 miles. It is likely that the contract for the work will be awarded this week.

Judging from replies to the inquiries sent out by F. H. Stillman of the Watson-Stillman Company, New York, asking the trade for an expression of opinion on the proposition to organize a machinery and metal club, with quarters in the Hudson Terminal Building, the movement is meeting with general approval in the trade. Many well-known men in the machinery fraternity have expressed their willingness and desire to join such an organization, and scores of enthusiastic letters indorsing the movement inaugurated by Mr. Stillman are in his hands, as are the names of several hundred people in the trade who have given the movement their approval. When sufficient names have been received to assure it, Mr. Stillman will call a meeting of those interested and an organization will be formed. The projectors of the movement have been informed by the Hudson Companies that the top of the building, in which the club will be located, will be available to them for use as a roof garden, and the two upper floors will also be reserved for the club if the movement is indorsed widely enough to warrant it.

The Arthur Koppel Company, Pittsburgh, Pa., has moved from its temporary office, 515 Market street, San Francisco, Cal., to its new permanent offices at 1509-1501 Chronicle Building.

Catalogues Wanted.—The Goshen Iron Company, Wilmington, Del., would be pleased to receive catalogues, price-lists, &c., from manufacturers and dealers in material and supplies used in connection with the operation of blast furnace, coal and ore mines, &c. These should be sent to P. P. Huston, Jr., secretary.

The Carr Engineering Company, Los Angeles, Cal., is to build a new foundry, machine and pattern shop, and desires catalogues from manufacturers of equipment for these departments.

New England Machinery Market.

WORCESTER, MASS., March 19, 1907.

The market presents no changed condition. Several Boston machine tool dealers report a slight falling off in inquiries during the past week, but others found business exceedingly good, so that it may be taken for granted that where a lull was felt it was merely one of those common enough happenings which are followed by a bunching of inquiries and orders. Dealers who handle the Cincinnati tools state that the flood of several weeks ago caused additional delays in deliveries, and that which is now in progress will undoubtedly have the same results. A few of the Cincinnati machine tool builders are directly affected, works having to be shut down during the last period of abnormal high water in the river, and it is presumed that the same enforced idleness of works is being repeated. Those manufacturers whose plants are above the dangerous levels suffered from delays to railroad traffic caused by flooded tracks. Of course the trouble is only a temporary one, yet it adds another cause for delayed deliveries.

The flurry in the stock market had no effect upon manufacturing business; in fact, it was not noticed excepting in a very few instances. One or two isolated cases are reported of cancellation of orders for machine tools, where buyers became overcautious. These instances acted hardly as ripples in the flood of prosperity which characterizes the trade.

Machinery dealers in Boston and elsewhere are finding their loose leaf price books in a very congested condition, owing to the failure of manufacturers to realize what is desired in the way of information for these books. The lists as supplied are too voluminous, the dealers state. Too much information is contained in some instances, while in others the attempt is not made to get the greatest possible amount of information on a few sheets, which includes using both sides of the paper. Some comparatively small lines of tools are given a dozen or more leaves, when all that the dealers need for the purposes of their salesmen could be put on a single leaf or two at the outside. The dealers believe that there is hardly a case where more than half a dozen leaves, using both sides of the paper, would not give all the information needed in talking business with customers. They assert that the price-lists should not be considered as catalogues, and should contain no information excepting such as pertained strictly to prices. The result of the too profuse use of data by the manufacturers is that price books have swelled to magnificent thickness, some dealers requiring more than one. In some cases manufacturers' lists are omitted by salesmen because they do not wish to burden themselves with too great a volume of price books. The dealers are very much gratified that the standard loose leaf system price sheets has been so generally adopted by the machine tool builders, and they are now engaged in a campaign to secure a complete and universal "boiling down" of information, which, once accomplished, will make them well contented.

The Eureka Shoe Machinery Company, Boston, has been incorporated in Massachusetts to manufacture shoe machinery. No definite plans have been formulated for establishing works, but the interested parties state that it is the intention to build shoe machinery later on, though where is not determined. In fact, the enterprise is in its initial stages only. The authorized capital stock is $250,000. Ambrose S. Vose is president, Arthur F. Gray, 53 State street, Boston, is treasurer, and James M. Hall, clerk.

The Boston & Northern Street Railway Company, 84 State streete, Boston, Mass., is planning to make large additions to its car barns at Reading, Mass., which will include a material increase in repair shops.

George W. Fifield, Lowell, Mass., manufacturer of machine tools, has notified his employees of an advance of 10 per cent. in wages, beginning March 11.

A free exhibition of industrial conditions in relation to health, safety and welfare of employees will be given at Horticultural Hall, Boston, April 8 to 14, under the auspices of a number of Boston associations which are interested in this class of industrial advancement. The International Exposition of Safety Devices and Industrial Hygiene, which attracted much attention at New York, has been loaned for the occasion and will form an important part of the exhibition.

Landers, Frary & Clark, New Britain, Conn., manufacturers of hardware, are to make large additions to their already extensive works this season. There will be a five-story brick building, joining the present building on Commercial street, with a frontage on Elm street running close up to the foundry. The main building will be 50 x 180 ft., with wing 40 x 72 ft. Plans will be submitted for figures on other new buildings, including press and tempering rooms.

The Bureau of Naval Ordnance has completed plans for the new Government torpedo factory to be built at Newport, and expects to advertise for proposals for the construction of the building in the immediate future. The building will be a large one, employing 200 people, and will require a large amount of high class machine tool equipment.

The new plant of the Barlow Mfg. Company, Holyoke, Mass., manufacturer of metal display fixtures, already alluded to in this column, will be of considerable size. It will be of brick and will have four stories, and will be 70 x 130 ft., with ell 30 x 60 ft. It will be located on Winter street.

The second-hand machinery department of E. Buxton & Son Company, Worcester, Mass., has been organized as a separate corporation, to be known as the W. A. Buxton Machinery Company. The capital stock is $30,000. Walter A. Buxton, Newton Highlands, Mass., is the president and treasurer; Philip L. Buxton, Worcester, vice-president, and Lewis A. Woodis, clerk and manager, in which office, as head of the machinery department, he has acted for E. Buxton & Son Company for some years. The company will occupy a new building recently completed. The E. Buxton & Son Company does a large business in scrap metal, and it is considered desirable to separate the two departments for the sake of convenience in the transaction of business.

The Gardner Machine Works, Gardner, Mass., manufacturer of chair machinery, is to erect an addtion to its plant, one story, 34 x 60 ft. The demand for the machinery built by the company has made necessary this increase in manufacturing facilities.

The Electric Diamond Grinder Company has been organized at Boston, Mass., to conduct the New England agency of the Luther Bros. Company's high speed tool sharpening and grinding machinery. The company's office will be at 35 South Market street. This line will be handled exclusively. The company has a capital stock of $10,000. John J. Geddes is president, Frank H. Holden treasurer and Merlin A. Hodge clerk.

The Hamilton Mfg. Company, Lowell, Mass., textile manufacturer, is planning to establish a power plant and coal pocket, for which $150,000 will be expended. The details of building and equipment are not decided.

The McCrum-Howell Company, manufacturer of boilers, radiators and enameled ironware, will spend about $20,000 in improvements to its plant at Norwich, Conn. There will be a new cupola house, coke sheds and boiler plant.

Cleveland Machinery Market.

CLEVELAND, OHIO, March 19, 1907.

After a slight lull, lasting for about a week, the trade has resumed its former activity and buying is now as heavy as it has been for the past two months. During the past week quite large orders for machine tool equipment for two automobile plants in other cities have been placed with machinery dealers in this city, and a local concern that is erecting a new plant has placed a large order for equipment. Otherwise the buying has usually covered one or two tools for additional plant equipment. The demand continues general for all kinds of machine tools. There are many inquiries for small tools for quick delivery, and a number of orders have been booked for heavy tools for delivery late in the summer.

Deliveries show no improvement, and on many tools some dealers are not promising deliveries before next spring. Prices on machine tools remain unchanged and dealers do not expect any further advance. The demand for second-hand tools continues heavy, but very few of such tools can be found for sale. Both manufacturers and dealers see no indication that the present active buying of machinery will let up for some time.

A new manufacturing center is being developed in Cleveland by the Manufacturing Realty Company, that was recently formed to improve 164 acres in Collinwood, a suburb of Cleveland, for manufacturing sites. The property lies between the Lake Shore and Nickel Plate railroads, to both of which it will be connected by tracks. A contract has been closed with the Cleveland Electric Illuminating Company to erect a substation on the site from which power for the operation of the plants may be obtained. The Cowing Engineering Company is now building a plant on the new tract, having taken 15 acres.

The American Railway Signal Company expects to place orders within the next 60 days for considerable additional shop equipment, including engine and turret lathes, screw machines, drill presses and other machine tools. This company will erect a new plant during the coming season, adjoining the plant of the Cleveland City Forge & Iron Company. The new equipment will be placed in the present plant on St. Clair avenue for use until the new plant is completed. The company reports that it is rushed with orders, the Pennsylvania Railroad taking about all the signals the plant can turn out. The new plant will be three stories high, 60 x 200 ft., with an L 60 x 150 ft.

The Cleveland Drop Forging Company has just been organized, with a capital stock of $25,000. It has secured temporary quarters in a forging building that is being erected in connection with the plant of the Ohio Ceramic Engineering Company, but will eventually build a plant of its own. The company has placed orders for two hammers and will buy additional equipment in a few days. A. W. Stone is president and treasurer; R. T. Price, vice-president; T. S. Morris, secretary. Because of the delay in securing equipment the company does not expect to be able to get its plant in operation for about five months.

The Grant-Lees Machine Company, which was recently organized, with capital stock of $100,000, to manufacture a new automatic gear cutter, has commenced operations in a factory formerly occupied by the Baker-Resek Company at Quimby avenue and East Sixty-ninth street. The gear cutter is the invention of E. J. Lees and John J. Grant. The business starts out in a very satisfactory manner. G. B. Collings is president, E. J. Lees vice-president and superintendent, and C. W. Blossom, secretary and treasurer. The company expects to increase its capacity soon, and will be in the market in about three months for a number of machine tools.

The Modern Machinery & Engineering Company has been incorporated and has acquired the business as selling agents for the Potter & Johnston Machine Company and the Landis Tool Company, formerly conducted by W. E. Flanders, with offices at 309 Schofield Building, Cleveland, and 933 Monadnock Block, Chicago. Thomas F. Ahern, who has been manager of the Chicago office for the past two years and was formerly with the Pratt & Whitney Company, is treasurer.

The Rainier Motor Car Company, New York, has decided to locate its new plant on a 50-acre site at Saginaw, Mich. The company, which is capitalized at $1,000,000, announces that it will at once begin the erection of a large plant, at an expense of about $600,000. The entire machinery equipment, amounting to about $150,000, has been ordered through the Modern Machinery & Engineering Company, Schofield Building, Cleveland, Ohio. The company expects to have its plant in full operation by June 15.

The Galion Iron Works Company, Galion, Ohio, has just been incorporated, with a capital stock of $100,000, and will erect a plant for the manufacture of a patent sectional cast iron culvert pipe. The company will also engage in a general foundry business. H. Pounder is secretary. The other incorporators are D. C. Boyd, L. M. Liggett, H. Gottdeiner, G. L. Steifel and J. M. Talbott.

The Cleveland Burial Case Company has just closed contracts for the building of a large four-story plant that will cost about $100,000. The plant will have a frontage of 245 ft. on St. Clair avenue and 234 ft. on Oregon avenue. The company will purchase considerable electrical equipment, including a 200-kw. generator.

David Round & Son have recently placed orders for several special automatic machines that will materially increase the output of their plant. They are rushed with orders for chain and chain hoists, and are compelled to turn away many good orders. Good sized orders have been received from Eastern shipyards, indicating a great deal of activity in shipbuilding during the coming season. David Round & Son have just prepared a handsome new catalogue, which will be ready for distribution this week.

The Silver Mfg. Company, Salem, Ohio, has commenced the construction of an addition, 70 x 100 ft., to its foundry, and will add new coke ovens and another crane. The company will also enlarge its machine shop with an addition 100 x 150 ft. In addition, the company will erect a new office building of pressed brick, with stone trimmings. The company will require no additional machine shop equipment at present, as the company's present machine shop is crowded, but will add some tools from time to time as required.

The Moore Engineering Company has prepared plans for a four-story brick factory that will be erected at Conneaut, Ohio, by the National Electric Lamp Company. The power equipment will include two 100-hp. boilers, a 60-kw. alternating current generator and a 94-hp. engine. The order for the generator has not yet been placed. Work on the new plant will be started at once.

The Machinery Forging Company has started the erection of a machine shop, which will be used for finishing the company's products. The addition will be 40 x 60 ft., two stories high. When the building is completed the capacity of the plant will be more than doubled. The company will add several new machine tools that have already been purchased.

Preliminary plans for varnish factories for W. W. Lyons & Co., Pittsburgh, and the Pecora Paint Company, Philadelphia, Pa., are being prepared by the Moore Engineering Company.

Chicago Machinery Market.

CHICAGO, ILL., March 19, 1907.

Whatever apprehension may exist in certain quarters as to the future of the country's capacity to consume the products of manufacture at the rate they are now being turned out is apparently not shared by producers generally. No better evidence of this fact is needed than the unremitting demand for tools and machinery that as yet shows no signs of abatement. As the weeks go by conditions as to deliveries show, on the whole, no appreciable change, and while here and there manufacturers are able to fill orders for machinery equipment with reasonable promptness the greater part are booked ahead for weeks and months to come. Electric apparatus of all kinds is in great demand, and orders for generators and motors, of both large and small units, are plentiful. The growing favor with which the distribution of power through electric driven units is regarded is responsible for the displacement, by electrical power, of line shafts and belting in many shops and factories, thus creating a larger use for motors. It was freely predicted some months ago that if the high cost of copper continued to prevail its effect would soon be seen in a curtailment of consumption in all electrical equipment, wherein it plays an important part. But, though copper has in the meantime advanced to higher price levels, no such effect has been felt; and to-day all manufacturers of electrical machinery are enjoying their full share of the phenomenal trade observed in all machinery lines.

Notwithstanding the extensive use of electrically distributed power, other forms of power transmission are not suffering any decrease in demand on account of this competition. As indicative of the supporting power that underlies the present remarkable volume of machinery trade, reference is made to a report of the Dodge Mfg. Company, Mishawaka, Ind., maker of pulleys, shafting and especially designed rope drives and other forms of power transmission, in which it is stated that, though with largely increased capacity and working overtime as much as practicable with the help available, it is unable to keep pace with accumulating orders. A new department has been recently added to this large plant, organized for the purpose of building the Eureka water softener, and to accommodate which a shop 150 x 250 ft., of steel construction, has been erected and equipped with modern plate and sheet working machinery. Present indications point to the doubling within a very

short time of the shop capacity in this department, which will, of course, involve the purchase of a complement of machinery suitable for this work.

The Union Drop Forge Company, 64-84 East Ohio street, Chicago, has recently made important additions to its machinery equipment, in which are included 11 drop forge hammers of various types and capacities. Two of the largest of these tools are steam drop hammers, with drops weighing 3000 lb., furnished by the Chambersburg Engineering Company, Chambersburg, Pa. These tools, though ordered several months ago, are just received and are now being installed. Space is reserved for another tool of similar character, which will be added when required. Although enlarged within a year by a building 50 x 100 ft., the plant has already been overcrowded and a new two-story brick building, located across the alley from the main plant and fronting on Indiana street, is now being erected for the accommodation of additional boiler units and the engine and generator equipment. Two 400-hp. Stirling water tube boilers, fitted with automatic chain grate stokers, furnished by the Green Engineering Company, Chicago, have been purchased and will be installed as soon as the building is ready for their reception.

As soon as its buildings, now in course of erection at Waukegan, Wis., are ready for them, the Chicago-Milwaukee Electric Company will install two 3000 and one 1500 kw. Curtis steam turbine units to furnish power for the fast interurban service to be established between Chicago and Milwaukee, when the line is completed through to the latter point. Space has been provided in the new power house for an additional turbine unit of 8000 kw., which will be supplied when needed. The extension from Waukegan northward has reached Racine and cars running on a 5-min. schedule are now being operated to that terminal, while construction work is being rapidly pushed between there and Milwaukee.

The Koehring Machine Company, Milwaukee, Wis., was recently incorporated, with a capital of $25,000, to manufacture concrete mixer machines.

The Litchfield Foundry & Machine Company, Litchfield, Ill., has recently been reorganized and is now owned and officered by Chas. E. Morgan, president and treasurer; Thos. L. Bryce, vice-president and manager; Wm. A. Bartman, secretary and cashier; Clarence M. Ridgley, mechanical engineer; Daniel A. Sweeney, superintendent. The business will be continued on the same line as heretofore conducted, and will include the manufacture of the Litchfield hoisting engines and mining and other machinery.

Plans are being made for important improvements in the plant of the Litchfield Gas & Electric Company, Litchfield, Ill. They will consist of the installation of a boiler of 200 to 250 hp. capacity, a 100-hp. engine and a 150-kw. alternating current two-phase generator, for which the company will soon be in the market.

The Utah Light & Railway Company, Ogden, Utah, is preparing plans for the extension of its plant, and during the coming summer expects to build a large brick building for use as a substation. The building will be equipped with modern electrical machinery, the cost of which is estimated at $50,000.

Benj. B. Czapski, St. Paul, Minn., dealer in iron and steel, railroad supplies and machinery, has by legal action been granted permission to change his name, and will hereafter be known as Benj. C. Bradford. In his card announcing the change of name, Mr. Bradford explains that it was made necessary because of the difficulty experienced in spelling and pronouncing the name.

Philadelphia Machinery Market.

PHILADELPHIA, PA., March 19, 1907.

The business transacted in the past week was not very extensive, and the demand for tools for immediate purchase was rather light. This condition has been attributed by many in the trade to the recent unsettled condition of financial matters in general and the tendency on the part of prospective purchasers to hold back until they can more clearly size up the outlook for business in the future. While the volume of immediate orders has decreased, manufacturers have a tremendous amount of business on their books, which will keep them actively engaged for months. In a few cases it is said that deliveries are a shade better, but as a rule tool builders have been totally unable to catch up on deliveries and still refuse to take business for some classes of tools subject to definite date of shipment. This condition is due not only to the excessive volume of new business, but also to the fact that manufacturers are unable to get deliveries of raw and finished materials entering into the construction of tools.

Inquiries keep up remarkably well, but are largely from the small buyer, who wants tools for minor extensions to his present equipment. There is some small inquiry for equipment covering a few tools for new propositions, but the market is bare of specifications covering any extensive equipment. One or two large propositions, mention of which has been made several times in these columns, are still under consideration, but the trade expects that one of these at least will be closed during the next week. Purchases the past week have been confined almost entirely to single tools, mostly of the medium and lighter classes. Special tools have been in fairly active demand and some good business has been closed in those lines.

For the standard lines of tools the foreign inquiry is not very strong, but that for special tools has been more active, and several fairly good sales have been made. Export business in power transmission specialties has been steadily increasing, and manufacturers of pressed steel pulleys and hangers report material gains.

The demand for second-hand machine tools is larger, and machinery merchants who have heretofore handled only new tools are entering the second-hand business quite extensively. Some classes of tools are almost as hard to get as the new ones, but in others the supply is good, and dealers experience but little difficulty in disposing of tools of the better known makes, provided they are in fairly good condition.

There is a little more activity in the demand for boilers and engines. Several fairly good sized propositions in the way of power equipment have recently been closed, and some large installations are under consideration. The higher power equipment seems to be in better demand, while that for the smaller powers is rather quiet.

Second-hand boilers and engines are not in as good demand on the whole as the trade would like, although the call for boilers of some few types has been better than the rest of the list, and in certain capacities are hard to get for prompt delivery.

There appears to be no diminution in the volume of business being offered the iron and steel foundries, and the various casting plants have as much business as they can well take care of. In many cases foundries are compelled to refuse new business except when the purchaser is willing to wait until delivery can be made, which, owing to the scarcity of raw materials, is somewhat uncertain in a number of cases. Tool builders as well as other consumers of castings complain considerably about delayed deliveries and have in a number of cases been compelled to send their patterns to foundries located at distant points, in order to get deliveries which will enable them to make promised deliveries of tools and machinery.

The Hires Turner Glass Company has awarded a contract from plans of Ballinger & Perrot, engineers, for the erection of a manufacturing plant and warehouse on Thirtieth street, near Locust street, to R. C. Devlin. The building will be 131 x 275 ft., two stories, and of the slow burning construction type, the windows being of wire glass in metal frames. The power plant for the new factory has already been placed, but the company is in the market for beveling machines for glass and mirror work and for a hand power or electric crane and runway, capacity about 2 tons.

The Department of Public Works, Bureau of Filtration, will receive bids under what is known as contract No. 106 until March 28 for coal handling machinery for the Torresdale pumping station. The work to be performed consists of a complete system of hoisting and transporting machinery to handle bituminous coal from barges in the Delaware River, and from railroad cars, to coal hoppers over boilers, and to a coal storage pile on the site. The plant is to be electrically driven and will include tip cars, a locomotive crane and ash handling machinery. Specifications may be obtained from the Chief Engineer, room 712, City Hall.

H. D. Dougherty & Co., manufacturers of metallic bedsteads, have had plans prepared by Watson & Huckel, architects and engineers, for a new plant at Seventeenth street and Indiana avenue, for the construction of which bids will be received by the architects until March 25. The new building will be five stories high, of triangular shape, 128 x 128 x 226 ft., and constructed of reinforced concrete. The power plant for the new building has already been contracted for, and as a large proportion of the present machinery will be removed to the new plant but little new equipment except drill presses will be required.

The Schofield Engineering & Construction Company, with offices in the Pennsylvania Building, has purchased a tract of land at Marcus Hook, Pa., and will erect thereon two buildings, 100 x 300 ft. and 100 x 150 ft., the construction work in connection with which it will do itself. The announcement as to the use of the new plant is withheld at this time.

Bridgman Brothers Company has begun the erection of a 90 x 100 ft., five story, reinforced concrete addition to their plant at Fifteenth street and Washington avenue, reference to which has already been made in these columns. The new addition will be used partly for a brass foundry and for finishing brass valves, &c. It is understood that no new equipment will be required, as that from their several scattered plants will be concentrated in the new addition.

The American Pulley Company continues very busy. Orders for pressed steel pulleys have increased materially and for the first 10 weeks of this year show a gain of 31 per cent. over the same period during 1906. For the same period

the increase in shipments over last year was nearly 60 per cent., this being made possible by various improvements to the plant which have recently been completed. The foreign business in these pulleys increased in 1906 some 30 per cent. over the previous year, and the same proportionate increase has been maintained so far this year. This company is now producing largely the 44, 46 and 48 in. sizes, which have recently been added to the line. Recent deliveries for export include shipments to the European Continent, Australia, New Zealand, South Africa, China and Japan, while domestic deliveries in carload lots have been made to purchasers on the Pacific Coast, New England and the South.

The Thomas H. Dallett Company notes a good demand for its electrically driven portable and boiler shell drills, both of standard and special design. A very good volume of business has also been taken for pneumatic stone working machinery, both for the export and domestic trade. This company is also about ready to place before the trade a new type of pneumatic hose coupling, for which exceptional merit is claimed. Every department of the plant is actively engaged, and deliveries of tools are being made to customers in all sections of the country.

Cincinnati Industrial Notes.

CINCINNATI, OHIO, March 19, 1907.

For the second time this year this city and vicinity has been in the throes of a disastrous flood, which has caused large financial losses to various industries. During January a flood compelled many large manufacturing plants to suspend operations for a week or 10 days, which they could ill afford, owing to the pressing demands for machinery. Again they have been forced to submit to the inevitable, and the result will be that no matter what efforts are put forth during the remainder of the year, they will practically be unable to regain the time lost. In the eastern portion of the city the Bollman-Wilson Foundry Company and the Bickford Drill & Tool Company have been compelled to shut down their plants until the river recedes. In the other direction, the Lane & Bodley Company, J. H. McGowan Company and the J. A. Fay & Egan Company are similarly affected, while along the borders of Mill Creek factories located in that neighborhood are also idle and will perforce remain so for perhaps a week to come. Over the river the Houston, Stanwood & Gamble Company's plant has been closed for a few days. Besides these larger concerns, numerous smaller industries of a similar nature are directly affected by the same cause, with like results.

The banquet tendered William Lodge by the Cincinnati Industrial Bureau was held at the Business Men's Club, March 18. Covers were laid for 150 guests, the machine tool trade being well represented. The impressions received during a trip to Panama was the topic of the remarks of Mr. Lodge, who said in part:

"The four commercial clubs of Boston, Cincinnati, Chicago and St. Louis, which recently made the trip to Panama, did not go officially, but purely with the idea of observing for themselves the conditions existing in the Zone.

"In order that the observation of the members might be made very thoroughly, the General Committee subdivided the work into eight committees, giving to each committee its own line of observation, with instructions to pursue that particular detail. These various committees were then subdivided into three or four and the work again divided, so that 90 individuals were pursuing almost a different line of inquiry, while making general observations in the Canal Zone. Instructions as to these intentions were sent by wireless telegraph to Chief Engineer Stevens, and when we landed on the wharf the heads of the various departments into which inquiry was to be made presented themselves and inquired for the Sanitation Committee, for the Committee on Progress of Work, &c., and the committees were conducted directly to the sources into which they wished to make inquiry, and information was given in the freest possible manner, and the various committees were taken directly to the particular branches regarding which they desired to obtain information.

"When we arrived at the place where the actual digging was in progress we were greatly impressed with the vigor with which the work was prosecuted, the splendid appliances in use and the actual effectiveness of the work. To illustrate, the writer personally saw one of the large steam shovels having a dipper, with a capacity of 5 cu. yd. at each dip, taking one dip about every minute, and loading a heavy car in five dips, and when 20 of these cars were loaded saw them transferred to the point where the earth was being delivered to make a fill, and each of these 20-ton cars unloaded in a half minute. This was done by means of a car between the engine and the first car, with independent engines and hoisting drums with about 1-in. wire cable attached to a plow, which was mounted on the rear car. All the cars were open on one side and at each end, and when the plow was set in motion it was drawn toward the locomotive, taking a half minute to travel the length of the car.

"The entire equipment ordered by the Government is not yet in operation, but it is safe to say that when it is on the ground very rapid work will be done, and it is estimated by the engineers that in the neighborhood of 1,000,000 cu. yd. per month will be dug and delivered. While some of the old French equipment is still being used, it is the intention to replace it, because of its lack of efficiency, as soon as the new equipment arrives.

"The Government has built and is now building hundreds of houses for the use of the workmen, which are built on piers and are surrounded by brass wire screens.

"All conditions necessary to make life pleasant in the way of schools, churches, amusements, &c., are provided, and it is estimated that in eight years the canal will not only be dug, but all the details completed, and the canal in operation in the year 1915. From what was shown us this looks perfectly feasible."

The Schoenthal Iron & Steel Company, Columbus, Ohio, is actively engaged in preparing plans for extensive improvements to its Buttles avenue plant, for which considerable new machinery as well as loading and handling devices will be required.

The Ohio Steel Foundry Company, whose plant will be located at South Lima, a suburb of Lima, Ohio, near the Lima Locomotive & Machine Works, has broken ground and the contractors are busily engaged on the preliminary work of construction. Harry Wright is president, John E. Galvin vice-president, and John W. Kaufman secretary and treasurer. When ready to begin operations, which will be, it is expected, within 90 days, the company will give employment to several hundred hands.

Government Purchases.

WASHINGTON, D. C., March 19, 1907.

The Bureau of Yards and Docks, Navy Department, Washington, will shortly ask for bids for a 5-ton locomotive jib crane for the League Island Navy Yard.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until March 26 for a radial drill, keyseater, drill grinder, emery grinders, power hack saw, pipe cutter, hand shear and pipe benders for the Eastern navy yards.

The following bids were opened March 12 for supplies for the navy yards:

Bidder 11, The Bethlehem Steel Company, South Bethlehem, Pa.; 15, Berry & Aikens, Philadelphia, Pa.; 21, Baker & Hamilton Company, San Francisco, Cal.; 51, Dunham, Carrigan & Hayden Company, San Francisco, Cal.; 57, Edward J. Elting, Philadelphia, Pa.; 88, Hallidie Machinery Company, Seattle, Wash.; 101, Henshaw-Buckley Company, San Francisco, Cal.; 138, Manning, Maxwell & Moore, New York; 154, Niles-Bement-Pond Company, New York; 158, Neville & Grubb, Portsmouth, Va.; 168, Prentiss Tool & Supply Company, New York; 187, John B. Roache, Brooklyn, N. Y.; 199, Sherman-Brown-Clements Company, New York; 202, B. F. Sturtevant Company, Hyde Park, Mass.; 230, Vermilye & Power, New York.

Class 1. One engine lathe—Bidder 88, $5215; 154, $5110.

Class 2. One set bending rolls—Bidder 11, $16,589; 154, $18,000, $18,400 and $16,000.

Class 3. One set bending rolls—Bidder 11, $5528; 55, $3690; 138, $4600; 154, $3400; 168, $3448.

Class 4. One set straightening rolls—Bidder 55, $4990; 138, $4700 and $4900; 154, $4675.

Class 5. One vertical drill—Bidder 138, $1800; 154, $1846.

Class 6. Two vertical drilling machines—Bidder 138, $520 and $700; 154, $1730.

Class 7. One drill press—no bids.

Class 8. One rotary slitting shears—Bidder 55, $1190; 88, $939.48; 138, $690; 168, $1014.

Class 24. One rotary blower—Bidder 57, $1600; 101, $2180; 158, $2145; 202, $2180.

Class 152. One bench speed lathe—Bidder 163, $130 and $69; 168, $42 and $44.50.

The following bids were opened March 12 for power plant equipment for the new buildings for the Department of Agriculture, Washington:

Bidder 1, The Biggar Heating Company, Washington, D. C.; 2, Standard Engineering Corporation, Philadelphia, Pa.; 3, D'Olier Engineering Company, Philadelphia, Pa.; 4, C. H. Sanborn, Boston, Mass.; 5, Thomas & Swift, Chicago, Ill.; 6, Hanley-Casey Company, Chicago, Ill.; 7, Lynch & Woodward, Boston, Mass.; 8, S. Faith & Co., Philadelphia, Pa.; 9, H. F. Murphy & Co., Philadelphia, Pa.; 10, Johnston Livingston, Jr., Company, New York; 11, C. Muralt, New York.

Proposal A, to install complete the entire plant and for furnishing steam turbines as required in paragraphs 48 to 67—Bidder 1, $90,502; 2, $83,810.25; 3, $92,260; 4, $95,-

675; 5, $97,182; 6, $81,785; 7, $82,767; 8, $78,000; 9, $89,627; 10, $88,871; 11, $92,500.

Proposal B, same as proposal A, with engines in lieu of turbines—Bidder 1, $89,752; 2, $86,477.55; 3, $91,210; 4, $95,675; 5, $90,861; 6, $80,785; 7, $79,786; 8, $80,481; 9, $92,492; 10, $86,920; 11, $89,850.

Proposal C, same as proposal A, except that steam turbines are required by alternate proposal stated in paragraph 68—Bidder 4, $96,375; 8, $79,650; 9, $92,497.

Proposal D, same as proposal A, with engines as required in paragraphs 104 and 105—Bidder 1, $92,417; 2, $89,298.25; 3, $94,260; 4, $98,000; 5, $82,962; 6, $82,785; 7, $84,946; 8, $83,471; 9, $94,692; 10, $88,925; 11, $92,640.

Amount to be deducted from proposal A for the omission of the entire engine and generator equipment—Bidder 1, $16,583; 2, $15,043; 3, $18,000; 4, $19,000; 5, $79,288; 6, $16,667; 8, $12,300; 9, $15,345; 10, $18,000; 11, $19,000.

Amount to be deducted from proposal A for the omission of one of the 150-kw. generator sets—Bidder 1, $6400; 2, $5366; 3, $6500; 4, $7650; 5, $90,922; 6, $5430; 8, $4840; 9, $4994; 10, $6464; 11, $7200.

Amount for internally fired boilers as per paragraphs 137 and 138—Bidder 1, add $12,400; 2, $1800; 3, $2600; 4, $4200; 5, $2106; 7, $4631; 8, $1920; 9, $2000; 10, $108; 11, $900.

Amount to be added for water tube boilers—Bidder 1, add $700; 2, $2290; 4, $1710; 5, $2730; 6, $3550; 7, $6011; 8, deduct $366; 9, add $290; 10, $850.

Amount for vertical type boiler feed pumps—Bidder 1, add $225; 2, $200; 3, $200; 4, $50; 5, $290; 6, $140; 7, $846; 8, $210; 9, $180; 10, $50; 11, $280.

Amount for underfeed stokers as per paragraph 144—Bidder 1, $3455; 2, $2350; 3, $2650; 4, $3300; 5, $3220; 6, $4000; 7, $3576; 8, $3206; 9, $3514; 10, $4390; 11, $3500.

For stokers as per paragraph 145—Bidder 1, $2953; 2, $2500; 3, $3050; 4, $3500; 5, $2333; 6, $3700 and $3000; 7, $3600; 8, $4125; 9, $3490; 10, $3448; 11, $4000.

For additional vacuum pump—Bidder 1, $1859; 2, $1400; 3, $2250; 4, $1800; 5, $1500; 6, $1539; 7, $1670; 8, $1300; 9, $1980; 10, $1964; 11, $1050.

For the omission of the entire forced draft apparatus—Bidder 1, $720; 2, $900; 3, $900; 4, $880; 5, $625; 6, $984; 7, $730; 8, $770; 9, $1100; 10, $649; 11, $750.

The following bids were opened March 12 for machinery for the Isthmian Canal Commission:

Bidder 2, The American Wood Working Machinery Company, New York; 6, The Bentel & Margedant Company, Hamilton, Ohio; 27, Fox Bros. & Co., New York; 31, Greenlee Bros. & Co., Chicago, Ill.; 53, Niles-Bement-Pond Company, New York; 55, Oliver Machinery Company, New York; 73, Prentiss Tool & Supply Company, New York; 82, Manning, Maxwell & Moore, New York.

Class 1. One combined rip and cut-off saw—Bidder 2, $281.05, 30 days' shipment; 27, $276.98, 48 days; 31, $333, 90 days; 55, $403, 90 days; 82, $277.94, 90 days.

Class 2. One combination band rip saw and resaw machine—Bidder 7, $786, 150 days; 27, $842.99, 85 days; 82, $828.14, 120 days.

Class 3. One automatic feed rip saw machine—Bidder 6, $400, 120 days; 7, $608, 150 days; 27, $539.99, 110 days; 31, $609, 90 days; 82, $532.30, 150 days.

Class 4. One automatic railway cut-off saw—Bidder 6, $378 and $418, 120 days; 27, $521.89, 110 days; 31, $551, 90 days; 82, $498.12, 150 days.

Class 5. One vertical car boring machine—Bidder 6, $800, 120 days; 27, $1444, 150 days; 31, $1149, 150 days; 82, $1432.43, 180 days.

Class 6. One vertical hollow chisel car mortising machine—Bidder 6, $1450, 120 days; 27, $2083, 150 days; 31, $2140, 150 days; 82, $2081.47, 180 days.

Class 7. One automatic car gaining machine—Bidder 6, $1030, 120 days; 27, $1687, 210 days; 31, $1407, 150 days; 82, $1661.65, 150 days.

Class 8. One planing, matching and joining machine—Bidder 2, $2513.70, 120 days' shipment; 7, $2425, 150 days; 27, $3587.98, 120 days; 82, $3554.53, 150 days.

Class 9. One planing, matching and joining machine—Bidder 2, $2215, 120 days; 7, $2285, 150 days; 27, $3298, 210 days; 82, $3273.05, 240 days.

Class 10. One hand planer and jointer—Bidder 2, $256, 30 days; 6, $262, 120 days; 7, $235, 150 days; 27, $338.60 and $239, 120 days; 31, $317, 90 days; 55, $295, 90 days; 82, $333.50, 240 days.

Class 11. One automatic planer knife grinding machine—Bidder 2, $296.60 and $321.60, 30 days' shipment; 7, $400, 150 days; 27, $198 and $359, 50 days; 82, $341.88, 90 days.

Class 15. One dimension planer—Bidder 7, $1100, $1225 and $1350, 150 days; 27, $1645.55, alternates $1705.62 to $3060.71, 120 days; 82 (10 bids), from $1661.68 to $3041.33, 150 days.

Class 18. Three steam hammers—Bidder 27, $6533.80, 155 days; 53, $5972, 185 days; 73, item 20 only, $1014, 35 days; 82, $5802.11, 210 days.

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HARDWARE

CASTING up accounts after a year of prosperity and exceptional activity in all lines of trade should be an agreeable occupation. There is reason to believe, however, that not all Hardwaremen have found the task which has recently engaged their attention one of unalloyed pleasure. Reports representing the experience of many individual merchants indicate that with many retail merchants the profits of last year's business proved disappointingly small. With prosperity everywhere prevailing, with unprecedented expansion in all departments of business, with reduced losses from bad debts, and, above all, with trade in record breaking volume, merchants undoubtedly expected a highly satisfactory showing. Instead, profits are in many cases reported to be little, if any, above those of the year before, and to net a perceptibly smaller percentage on the amount of business transacted. After recovery from their disagreeable surprise the wisest merchants have concerned themselves with seeking the causes of their failure to realize their expectations. How could experienced and successful men be so mistaken in the fair outside of things? How should an active partner or manager of a concern explain the balance sheet to a stockholder not engaged in the conduct of the business?

Undoubtedly one reason for the disappointing showing in profits is found in the increase in expenses. Many merchants sustained increased charges which could not be avoided and for which they were not to blame. Rents for instance were raised; necessary supplies and requirements incident to maintenance were procured at higher cost, and advances in the remuneration of the working force were necessitated by conditions. It is now in order, however, for merchants to consider seriously whether or not in the general hurly burly and enthusiasm of good times, with pressing and important duties and plans, they did not frequently allow disbursements to increase as an easy and perhaps after all an economical course to pursue. For instance, if things went wrong in the shipping department and the clerk in charge excused himself with the claim that he had too much to do, the tendency was to provide him with more help, instead of examining closely to ascertain whether or not his claim was justified. Similarly, if the porter asked for an increase in salary it was easier to allow the $2 a week than to stop and argue the matter or break in a new man. Such expenditures run rapidly into money, and the aggregate is a surprise to the executive who, while trying to keep in touch with the details of the business, is bending his energies on expansion and growth. Whatever may have been their policy during the past year, it is safe to say that in the future many managers will more carefully scan questions and requests looking toward increased outlay as a result of the showing of the past year and will give a larger proportion of their time to studying how economies may be effected.

Another important cause which operated to reduce the profits of retail merchants is the fact that they had to pay higher prices for many goods on which they did not receive correspondingly higher prices from their customers. Attention has more than once been directed in these columns to the fact that Hardwaremen often charge too much for some of the articles which they sell, thus giving department stores and mail order houses an opportunity of which they have availed themselves most aggressively. There are many more lines, however, on which profits are decidedly meager, even in normal times, but still more so in a year like the past, when the cost of goods has increased, if through timidity or carelessness merchants have failed to make a corresponding increase in their selling prices. It may be that customers who have been in the habit of paying $1.75 for a Saw or $1 for a Shovel will be somewhat disgruntled at the addition of 10 or 15 or 25 cents to these prices, but a courteous explanation should be sufficient to show them that prices on Hardware articles are governed by the same laws that affect other commodities. The judicious marking up of prices in times like these is one of the prime duties of the merchant. If it is wisely discharged it will do something to give the balance sheet a gratifying and creditable record.

Condition of Trade.

The coming of spring is indicated in the character of current business and a quickening of demand from retailers. Manufacturers who have during the past month or two had an opportunity to make some progress in clearing up their back orders find renewed activity in the market, and orders are coming in to them in goodly numbers and covering fair quantities. Many of them are thus compelled to enter on the active business of the season without having been permitted to accumulate goods in their warehouses, and in many cases without having executed their orders taken some time ago. The difficulty of obtaining goods is still a marked feature of the situation. To some extent the delays in transportation are to be held accountable, but in addition to this scarcity of raw material and the congested and overworked condition of factories are influences which, with a large and insistent demand, unite in producing the existing state of things. The floods in the Pittsburgh District are causing an interruption in production, which will have a perceptible effect on the supply. Under these conditions there is need for good management on the part of merchants, both wholesale and retail, to avoid being left short of goods.

Chicago.

Considering the unusually favorable weather that has made the opening weeks of March almost real, instead of nominal, springtime throughout the West, and the known stability of trade conditions, it is not surprising that the jobbers should report—as they almost uniformly do—an increase of business over the corresponding period of last year. Discouraging crop reports that, with greater or less regularity and frequency are circulated at this season of the year, and startling sensational news from speculative centers, find little or no responsive feeling in industrial affairs generally, and so far have been without visible effect on the current prosperous trend of soundly organized operations. As has been anticipated, the demand for Wire Nails has continued to grow, and is now of unusual proportions. Rumors of an impending advance are still heard, and though it may possibly be realized, it should be borne in mind that it has not hitherto been the policy of the leading interests to encourage any undue elevation of prices on any finished products. The high price and scarcity of Spelter may, in any event, be made the basis of an advance on Galvanized products, though such action is not yet assured. The new list recently issued on Gray Enamelware resulted in a

net advance of about 7½ per cent. Heavy Hardware lines show no weakening in either volume of orders or firm holding of prices. Though deliveries in Bar Iron and Steel and all kinds of Sheets are more or less retarded, this condition has been prevailing for so long now that buyers have learned to adjust their orders accordingly; as a result they are able in face of the heavy drains made upon them by present demand to maintain stocks in fair assortment. There can be no question but that the present floodtide of business that is pouring in orders for goods of all kinds, and through every channel from every section of the country, represents the actual requirements of consumptive demand, and is not in any sense or measure the result of a speculative tendency to anticipate future values. Resting securely under a knowledge of these conditions, it is wholly unlikely that the confidence of the country will be seriously disturbed by anything short of a real calamity of tangible origin and nature. And until it comes or threatens the course of present day prosperity will suffer no check.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Business conditions throughout this section of the South continue very satisfactory. All the jobbers we have talked to report sales to be fully as large as last season, many of them showing a nice increase. We are experiencing considerable difficulty in getting deliveries of goods in nearly all lines. Both manufacturers and transportation companies are behind, and this is the greatest trouble that we have had.

It looks as if there were no end to the advances on Hardware, as we have had a number of additional advances during the last few weeks. We do not hear of any jobbers demoralizing prices, and the demand for goods continues excellent. While money is rather close, at the same time those who are entitled to it for legitimate purposes seem to be able to get all they need. We do not know what effect the decline in stocks in Wall Street will have upon the general business conditions, but we are inclined to think that it will not do much harm. Collections are keeping up well and are even better than we had anticipated.

Cleveland.

THE W. BINGHAM COMPANY.—Notwithstanding the many notes of alarm that have been sounded by pessimists throughout our country and the recent disturbances in Wall Street, the outlook for the year 1907 seems unusually bright, and we firmly believe that this year will eclipse any previous one in its volume of business and in the general prosperity of all our citizens.

There are many who think a tight money market will prevail for some time to come. Now, then, while dear money has of course its disadvantages, especially if arising from disorganization, financial panic or weakening of national credit, still there is another aspect, the importance of which is seldom sufficiently recognized, namely, that during a period of trade depression money is diverted almost entirely to safe investment channels, but in times like the present money for trade purposes is demanded by both the merchant and manufacturer, who seek to make the most of their present opportunities.

We believe that the Wall Street scare will have a tendency for good, inasmuch as it will set many men thinking and curtail very largely the riotous speculation that has been rife for some time past.

We do not believe there is anything ahead of us this year that would indicate anything but good business and prosperity. The manufacturers are loaded with orders, and the chief concern of the jobber at the present time is to be able to give his customers prompt shipments, this being impossible unless he has the goods on hand.

Some of the manufacturers have orders on their books that cannot be filled for months and months to come. In many cases, in heavy lines especially, they will not promise delivery for four or five months after the orders have been placed. The dealers, therefore, will do well to look to the jobbers to supply their wants.

We would strongly advise the trade throughout the country to keep fairly well stocked up on the lines which they handle, especially season goods, such as Wire Cloth, Netting, Hose, Refrigerators and kindred lines, believing that in the coming season it will be largely a question of having goods on their hands to sell them.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade continues satisfactorily active and appearances indicate a continuation of present activity, forming our conclusions largely from the reports we have from retail merchants and the animation shown by manufacturers. The change in weather conditions, doubtless, has made sales more active with the retail trade, and for the past week the weather has become more springlike. There have been some advances in price during the past week on certain kinds of Hardware, which manufacturers state are necessary, owing to increase in price of both raw material and wages.

During the past week the wild excitement in our stock market caused great excitement in financial circles. What the cause was of the "unfortunate" tumble varies even in the opinion of those persons who are supposed to keep in touch with general financial conditions. The opinion of some is that it was the unusually large demand for money by railroad managers, and of others that it was an effort to reduce the price of stocks in order to distribute stocks that were largely held by persons who wished to distribute. Both opinions seem unreasonable, however, but had this occurred in years past it might have resulted in a complete change of mercantile conditions.

The reported par value of all the railroad stocks in the United States is about $6,500,000,000. The depression in the value of these stocks during the week was over $2,000,000,000, which is about what is estimated as the entire cost of the Russo-Japanese war, and the falling off in all other stocks was estimated at about half what the railroad stocks declined. This wonderful occurrence continued about three days, when President Roosevelt, evidently in conference with Secretary Cortelyou, advised the Secretary to try and check what was called by some the Wall Street panic, and thus diminish the excitement throughout the entire country, by offering to redeem the $25,000,000 of 4 per cent. bonds due July 1, and further to make it known through the country at large that the deposits in banks for circulation would not be distributed, and the $30,000,000 now in bank deposits would not at present be withdrawn. The result was that the next morning stocks began to advance and reached within two days about one-half the amount of the decline. The unfortunate excitement all over the country has thus been largely reduced, and financial uneasiness is changed to hope for the future.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—During the past two weeks the business situation has remained in practically the same condition as outlined in our former review. At this season of the year pleasant and stormy days follow each other closely, which will probably represent the weather conditions until about May 1. The agriculturists are taking prompt advantage of every favorable opportunity to make preparations for the necessary field work. A copious supply of moisture throughout the corn belt has placed the soil in admirable condition for the reception of seed grain, so that general conditions as they exist at the present time could not be materially improved. The very satisfactory volume of business now being transacted warrants the conclusion that a still heavier trade will develop just as soon as the weather settles and permits outdoor work of all kinds to proceed uninterruptedly.

Portland, Oregon.

FAILING, HAINES & MCCALMAN.—Business continues remarkably brisk, and all season goods are going with a rush. Builders' Hardware and kindred lines we are still selling in large quantities, though the fact that there is a well-nigh universal strike of all saw mill employees in this section may interfere with us in a short time. This

strike, however, may be a blessing in disguise, for it may enable our stock to more or less catch up with our orders, which has been an unknown condition for a year.

For the last week immigrants have been coming into this section at the rate of something like a thousand a day. This will probably continue for some little time, as this is the period of low rates on all transcontinental lines. These newcomers, as a whole, are the best class of settlers we could wish for, having been successful in their old homes but wishing to come out to a land of mild winters and cool summers such as the Pacific Northwest. It is not the class of immigrants that sometimes comes into an undeveloped country (people who have never been successful in their old homes and hoping to change their luck) but people of push and determination who are bound to make a place for themselves in their new home.

So far everything points to a most successful year for crops of all kinds, especially small fruits. This means money in the pockets of every one in this part of the world.

Money seems to be plentiful in the territory, as collections are good and a very large proportion of the customers are discounting their bills and practically all meeting them at maturity without any trouble.

New Orleans.

WOODWARD, WIGHT & CO.—The car shortage condition continues worse in this section than ever, but we expect it is the darkest moment that is just before the dawn, as the movement of coal and grain will soon cease to divert cars from this part of the country to more northern points. The prospects for sugar, rice and cotton crops are excellent, and while the car shortage has been a great evil, it is not an unmixed evil; it has kept the stock of lumber in the yards of distributors all over the country down to a minimum, and should result in a satisfactory demand for this product for a long while to come.

There is a condition facing the large handlers of Iron and Steel all over this country now which is a very dangerous one. This is most unfortunate, and will require great care on the part of the jobbers and manufacturers of this line to handle it. A tremendous delay awaits the jobber after he has placed his order before he gets his goods. There are some lines in which shipment on contracts cannot be gotten inside of five months, and others in which shipment cannot be gotten before June 1, and with no figure guaranteed at which the goods will be billed on or after June 1. It is probably better to do this than to let prices get above their present level, but at this moment it is an impossibility for a jobber in heavy material to keep his stock in shape as there are very few Hardware merchants that are prophets or sons of prophets, and a man must necessarily be that to know how to make up specifications to fit his stock three to five months from this time. Some makers of heavy goods have solved the proposition by establishing branch warehouses in the principal distributing centers, and by keeping them well supplied, thus taking off the jobber the impossible burden of trying to foresee what his stock will require so far ahead, and this is what the manufacturers in the heavy lines will have to come to in the end.

Twenty years ago the jobbing profits were such that the merchant could afford to take considerable risk on his stock, but at the present moment the margin on Sheets, Plates, Bars, Nails and Pipe is so small that if he attempted to carry a four months' stock—which is the smallest under present jobbing conditions he could get along with and keep a reasonable supply of all sizes on hand—and face a small decline of $3 to $4 per ton his profits on this line for the entire year, after his cost for handling was considered, would be absolutely wiped out.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—Business for the month has opened up unusually well, but the second period of excessive rain precitipation has made itself felt in reducing country roads again to a state of impassability, checking farm operations and discouraging people generally in the bottom lands, which are subject to overflow.

It is very seldom that we have two floods in one year, but this seems to be destined to be our fate in the present spring. If we could only get the banks of the Ohio and its tributaries reforested as they were in the days of Daniel Boone, possibly we should not only have more use for Pump Guns, but less use for Pumps in other shapes to keep our cellars dry. Think of the glorious game in those days! We are, of course, duly grateful for the top dressing of alluvium which comes down to us from the rich fields of Ohio and Pennsylvania, but we do not want it too frequently. It spoils our golf links, and it takes quite a while for our spears of choice blue grass to outgrow the sticky coating.

The railroads still continue excessively busy. The enormous financial operations proposed rather stagger investors, however, and that has led to a decline in the price of securities which is almost staggering. The high price which money now brings has turned people away from bonds, which yield small returns, to notes and stocks, with their tempting rates of interest. Surely this is the year for money to have its innings. Those who are blessed with funds to loan are reaping a rich harvest. Why the railroads, which were already paying good dividends, increased the rate is still a mystery to us.

There is still difficulty in securing goods from the factories for immediate pressing demands, and no excess of production is visible anywhere. It may come in the course of time, but at present the country banks are the ones that have money, and their farmer customers are well to do. The main relief from the great pressure on the railroads might well be found in our waterways, which are never crowded. We look for the building of more boats and the development of the barge and towboat industry. A great boat once on its way moves rapidly to destination and is not hung up by strikes or congestion at the great shifting centers.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—March, in volume of business, promises to be a record month. Collections are good. The only serious drawback is the difficulty of obtaining enough goods in certain lines to fill orders. The situation in this respect will not be improved by the floods in Pittsburgh and in many manufacturing towns in Ohio.

We extend our sincere sympathy to the flooded districts. If it is not one thing it is another. We had a cyclone, San Francisco had an earthquake, Baltimore had a fire. With wind, water, fire, and an occasional earthquake, we are reminded of the uncertainties of life and property and we are drawn together by the bonds of human sympathy.

The writer has just returned from a trip to Central America and the canal, coming home via New York. Have covered 6000 miles. Our trip was brought to a sudden end at Colon when all the passengers from Port Limon were placed in quarantine by the United States Government on account of yellow fever. Everything was lovely until we felt the restraining hand of Uncle Sam. We had the choice of going into quarantine or taking the next ship for New York, and preferred the latter of the two evils.

Notwithstanding the numerous resignations of top men, the rank and file of the workers on the canal seem to be enthusiastic. The Government has 31,000 employees at work. Employees returning on vacations state there is a good deal of lost action on account of the number of bosses and the amount of red tape.

President Roosevelt's visit led to renewed enthusiasm in the work, especially among the workers. It seems it was arranged to take him over the canal according to a certain fixed schedule, he was to be shown certain things. But when he arrived he took a package of papers out of his inside pocket and it then developed he had a whole lot of inside information received through secret or unofficial sources. He proceeded to work on his own schedule and to make investigations in his own way. We were told this change was somewhat to the discomfort of the head men but greatly delighted the employees.

All points visited declared business to be excellent.

All, however, seemed to have their troubles. A number of Southern jobbers complained bitterly of lack of efficient help; they state they cannot get the right kind of men. They put up with what they have because they cannot get any better. If they are too insistent upon good service the men simply walk out.

In New York there was a heavy snowstorm. I dropped into the office of a well known manufacturer shortly after 9 o'clock and was struck with the number of empty desks. I was told New York employees are compelled to live many miles away from the business centers. They sometimes find it necessary to take the steam lines, cross on the ferries and then take the surface, elevated or underground lines to reach their offices. Whenever there is a heavy snowstorm traffic is blocked and as a result they are an hour or two late in the morning and for the same reason are compelled to leave an hour or two earlier in the afternoon. The snow had been shoveled into great piles in the narrow streets. Wagons threaded their way slowly in long lines. There were frequent blockades.

This traveler returned home convinced there are worse places in which to do business than in the wild and woolly West. "It is better to endure the ills we have than to fly to those we know not of."

While this report is being dictated we are advised of advances in Wire Cloth and Poultry Netting, and it is also strongly intimated that there will be an advance in Wire and Nails next week. So while stocks are being shaken down Hardware is shaken up.

The great mass of the people of this country to-day are prosperous; our prosperity is on a solid foundation. The people do not seem to be inclined to take seriously the convulsions in Wall Street. Those who know anything about it at all have all along known what the leaders of finance were doing with railroad stocks. We have all along known in Wall Street it was "every man for himself and the devil take the hindmost." All who have gone into Wall Street to play the game have known the kind of chips they were playing with. Therefore the rolling up of the eyes and the holding up of the hands in holy horror at recent revelations of personal selfishness in the manipulation of stocks by high officers in railroads seems to be just a little hypocritical. It is like a lot of men who know all about the personal life of another man and still associate with him until he happens to get his story told in the papers and then they suddenly do not desire to be seen with him at the club.

For consolation read history. While it may be less orthodox, is not the world from year to year growing better and more merciful?

St. Paul.

FARWELL, OZMUN, KIRK & CO.—Business conditions in the Northwest have continued very much as expected. The weather during March has been favorable. The heavy body of snow in the latitude of St. Paul has been daily melting away without rain. Farther north less of the snow has gone, but it is hoped it, too, may go without floods. The railroads have opened up their branch lines and the snow blockade has been for some time a thing of the past.

There is still serious difficulty in getting cars, and this condition may be expected for some time. There is also difficulty in getting orders in some lines filled promptly. This trouble is not so great in Hardware as in some other lines, but it is a real trouble, and causes annoyance and loss.

The congestion in railroad traffic is serious. We may be sure it has the most thorough consideration possible by the railroad operators, but when they have done all they can the situation will have been only partially relieved. In these active, prosperous times more cars and locomotives, more side tracks and double tracks and more and larger terminals are demanded, all of which require time and money.

As things are now going, with a stringent money market, with an adverse public sentiment and hostile legislation often directed by men who do not deserve to be trusted, it can readily be seen that these great requirements must be slowly met, and meanwhile business interests and the entire country must suffer. Railroad managers have not been free from blame, but it is the hight of folly for public sentiment to encourage legislatures to pass unreasonable and burdensome laws to the great injury of the railroads which are such a vital part in the commercial activities and material advancement of the world.

The prospects for the spring and summer business in the Northwest are good. Some important improvements will be delayed by high price of labor and of some articles of material, but there will probably be as much undertaken as can be carried out in the year, and the year now promises to be busy and profitable.

NOTES ON PRICES.

Wire Nails.—Demand continues in large volume and is apparently confined to requirements rather than of a speculative character. The floods in the Pittsburgh District have caused some of the Nail mills to close down and have damaged a large amount of stock. This temporary interruption will reduce production and put deliveries further back. The difficulty of getting cars for loading mill products appears to be growing greater instead of less, as the season advances. The market is firm and prices unchanged. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....$2.00
Carload lots, to retail merchants..... 2.05

New York.—Demand at store is light and is attributed to unfavorable weather conditions for outdoor work. The mills are slow in making shipments and detentions in transportation makes goods tardy in arriving, so that jobbers' stocks are more or less broken in assortment. If demand was at all brisk, these conditions would work additional hardship. Local prices are fairly well maintained notwithstanding the limited business. New York quotations are: To retailers, carloads, on dock, $2.19; less than carloads, on dock, $2.33; small lots at store, $2.30.

Chicago.—With no shrinkage in demand and buyers crowding the mills for shipment on overdue orders, the Wire Nail market is more active than it has been in a long time. While the demand is really phenomenal in its proportions, it seems to represent the actual needs of consumers rather than the accumulating of store stocks. Prices remain unchanged and quotations are as follows: $2.15 in car lots to jobbers, and $2.20 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—The Rankin and Braddock Works of the American Steel & Wire Company were badly damaged by the flood last week, while the Monessen Works of the Pittsburgh Steel Company, being located above high water escaped without damage, but the plant was compelled to shut down for several days owing to the Lake Erie Railroad being out of commission. The loss of output occasioned by the shut down will throw these concerns further back in deliveries and there is also much complaint owing to scarcity of cars. For some reason the railroads seem utterly unable to furnish cars as fast as needed and this is retarding shipments to great extent. There are reports of a coming advance in price of Wire Nails, but nothing official has been given out. Demand is heavy and the mills have a large tonnage on their books. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent discount for cash in 10 days:

Carloads, to jobbers.....$2.00
Carload lots, to retail merchants..... 2.05

Cut Nails.—A meeting of the Cut Nail Association will be held in Philadelphia on March 26, and there is a possibility of an advance in prices being made. Steel is high in price and hard to obtain, which, in the minds of some, appears to justify higher prices. Mills in the Wheeling (W. Va.) District have suffered from the recent floods to the extent of being closed for three or four days, which of course has reduced production considerably. Cars for mill shipments are hard to obtain. Premiums of 5 to 10 cents per keg are obtained for reason-

ably prompt shipments. Quotations are as follows, f.o.b. Pittsburgh: Carload lots, to jobbers, $2.05; less than carloads, to jobbers, $2.10; less than carloads, to retailers, $2.20. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 10 cents advance on Steel Cut Nails.

New York.—Local business is comparatively light and Nails are scarce. Jobbers' stocks are more or less broken in assortment, owing to the slowness with which shipments from mill are arriving. Jobbers' quotations are on the basis of $2.30 for small lots at store.

Chicago.—Sharing the activity in Wire Nails, Cut Nails are in unusual demand. Certain sizes are scarce, but for reasonably good specifications shipments can be made in 30 days. We quote as follows: Iron Cut Nails, car lots, to jobbers, $2.30; to retailers, $2.35; Steel, to jobbers, in car lots, $2.20; to retailers, $2.25.

Pittsburgh.—The Cut Nail mills in the Wheeling (W. Va.) District suffered severely by the flood, and were shut down three or four days, which will complicate deliveries still further. There is also a shortage in supply of cars and in Steel, all of which operate against maximum output and shipments. For reasonably prompt deliveries premiums of 5 to 10 cents per keg over regular prices are being obtained. Quotations are as follows, f.o.b. Pittsburgh: Carload lots, to jobbers, $2.05; less than carloads, to jobbers, $2.10; less than carloads, to retailers, $2.20. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 10 cents advance on Steel Cut Nails.

Barb Wire.—Owing to scarcity of steel and shortage of cars, mills are unable to supply the active demand promptly. Some mills are still asking premiums of $1 to $2 per ton above general quotations. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.15	$2.45
Retailers, carload lots	2.20	2.50
Retailers, less than carload lots	2.30	2.60

Chicago.—The effect of the good weather of the past week has been felt in the rush of orders for Fence Wire. The talk of an advance on Galvanized Wire has not yet been realized, though it is still said to be under consideration. We quote as follows: Jobbers, Chicago, car lots, Painted, $2.30; Galvanized, $2.60; to retailers, car lots, Painted, $2.35; Galvanized, $2.65; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, Bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—We note a very active demand for Barb Wire for Fence building purposes, which the mills are not able to supply promptly owing to shortage in steel and in cars. The market is very firm, some mills continuing to ask premiums of $1 to $2 a ton over regular prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.15	$2.45
Retailers, carload lots	2.20	2.50
Retailers, less than carload lots	2.30	2.60

Smooth Fence Wire.—The closing down of a number of mills for several days, on account of the flood in the Pittsburgh District, has curtailed production of Wire and further interfered with shipments. Demand is heavy, cars are hard to obtain and steel continues scarce. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.85
Retailers, carloads	1.90

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanizer Wire take the usual advances, as follows:

	6 to 9	10	11	12 & 12½	13	14	15	16
Annealed	Base.	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago.—In common with all other forms, Smooth Wire is in strong demand. Not only the Fencing interests, but all shops and factories making Wire Goods are busily engaged, and are in the aggregate consuming a large tonnage. Quotations are as follows: In car lots, to jobbers, $2, f.o.b. Chicago, and to retailers, $2.05.

Pittsburgh.—The very high prices ruling for Spelter will probably result in an early advance on Galvanized Fence Wire. Demand continues heavy, and the flood last week, which shut down a number of mills for three or four days, will still further interfere with shipments. Steel continues scarce, and the supply of cars is inadequate to meet the heavy demands of shippers. The market is very firm, and we continue to quote f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.85
Retailers, carloads	1.90

The foregoing prices are for base numbers, 6 to 9.

Wrought Steel Butts.—The following are the new base discounts on Wrought Steel Butts, the recent advance in which was reported in our last issue:

	Discount.
Reversible and broad	70 and 5 %
Light reversible and light narrow	70 and 5 %
Loose joint narrow, light inside blind, &c.	70 %
Rack flaps, table and chest	65 %

Beyond these base discounts extras of from 10 and 10 per cent. to 10 and 10 and 10 per cent. may be obtained, according to the character of the trade and the size of the order.

Strap and T Hinges.—The advance in Strap and T Hinges announced in our last issue is represented by changes in base discounts, a new schedule of which has been announced by leading manufacturers as follows:

	Discount.
Light Strap Hinges	60 %
Heavy Strap Hinges	65 %
Light T Hinges	55 %
Heavy T Hinges	45 %
Extra Heavy T Hinges	60 %
Hinge Hasps	40 %
Cor. Heavy Strap Hinges	65 %
Cor. Extra Heavy T Hinges	60 %

Beyond these base discounts are the usual extras of 10 and 5 to 10 and 10 per cent. to retail merchants. It remains to be seen whether the prices made by the jobbers will be correspondingly advanced.

Wrought Shelf Brackets.—Pursuant to the advance in Wrought Steel Shelf Brackets announced last week, manufacturers have established a new base discount of 70 and 10 per cent., beyond which a nextra 10 and 5 per cent., or slightly more, may be obtained by the retail trade.

Wire Cloth.—Manufacturers of Wire Cloth have declared another advance of 5 cents per 100 sq. ft. to go into effect on April 1. As nearly all large buyers have probably purchased their requirements it would appear that the advance is made in the interest of the jobbers, whose resale price, according to the schedule of the manufacturers, will advance to $1.35 per 100 sq. ft. on the date mentioned. Hardware grade Cloth was advanced 15 cents to take effect at once.

Ideal Mfg. Company.—Ideal Mfg. Company, Detroit, Mich., which has been making Buzzacott's field cooking equipments, announces that it has discontinued the manufacture of this line and will dispose of its remaining stock to the trade at especially low prices.

Poultry Netting.—As reported in our last issue much difficulty is experienced in getting deliveries of Poultry Netting, which has been in heavy demand. Last week an advance of 2½ per cent., to take effect immediately, was announced by leading manufacturers. The market may be represented in a general way by a quotation of 80 and 5 per cent. discount on Netting, galvanized after weaving, and 80 and 10 per cent. on that galvanized before weaving, thus retaining the 5 per cent. differential regularly observed between these two kinds of goods.

Stove Boards.—The market for Stove Boards for the coming season has opened steady, with a satisfactory demand. The price to the retail trade may be fairly represented by a discount of 50 per cent. on paper lined embossed and 40 per cent. on the balance of the line.

Tacks.—Many manufacturers of Tacks have given notice to their customers of a change in their prices on tinned Tacks. These have formerly taken a 10 per cent. better discount than the regular goods, but have recently been advanced, so that the differential is only 5 per cent.

Bolts, Nuts, Rivets, Washers, &c.—Manufacturers of Bolts, Nuts, &c., who are this week holding their regular monthly meeting state individually that they expect prices on Bolts, Nuts and Rivets to be reaffirmed. Owing to a scarcity of Washer scrap, however, increasing firmness is reported in quotations on Washers, and it is stated that less cutting is being done by outside manufacturers.

Rope.—Thus far during the present month the demand has been lighter than manufacturers had anticipated it would be, in view of the excellent business done in December. Unfavorable weather conditions in this section for outdoor operations are regarded as delaying the opening up of the spring demand. While no change has been made in card prices, Sisal Rope is a little easier, owing to Sisal Hemp prices, which dropped off during the last couple of weeks. The market is fairly strong, notwithstanding the amount of business being done. Quotations are as follows: Pure Manila, 13 to 13½ cents; B quality, 12 to 12½ cents; Pure Sisal, 9¼ cents; No. 2 quality, 7¾ to 8 cents; No. 1 Jute, ¼ in. and up, 9 cents; No. 2 Jute, 8½ cents.

Binder Twine.—Reports are to the effect that damage has been done to the wheat and oat crops in Texas by the so-called green bug, and that it is working its way into Oklahoma and southern Kansas. The reports of winter killing in the winter wheat sections of the Middle West are regarded as having been exaggerated. The International Harvester Company is understood to be again offering so-called "plain tag" Twine at ½ cent below its prices for the regular tagged stock. This is supposed to be a settled policy of the company. The *Farm Implement News* explains that the term "plain tag" means that the tag contains only the name of the brand of Twine, the name of the manufacturer not appearing. It is not claimed nor admitted that this Twine is equal in quality to the regularly tagged stock. On the contrary, it is said to consist of the culls and rejections thrown out by inspectors. Eastern quotations are generally on the basis of 9½ to 9⅝ cents per pound, for less than carloads, ¼ cent less for carloads, f.o.b. New York. Western quotations, which are unchanged as follows, are said to be slightly shaded in some cases: Sisal and Standard, 9½ to 9⅝ cents; Standard Manila, 10¾ cents; Manila (600 ft.), 12¼ cents; Pure Manila, 13¾ to 14 cents per pound. Carloads, ¼ cent less; 5-ton lots, ⅛ cent less, central delivery.

Window Glass.—According to estimates by those closely identified with the Window Glass trade the available supply on March 1 was under 1,100,000 boxes, and that by May 4 1,500,000 additional boxes will have been made, providing a little more than 2,500,000 boxes, exclusive of the output of the American Window Glass Company. If the hand operated factories go out of blast May 4, as it is now supposed they will, this amount of Glass will have to provide for the requirements from March to October, inclusive. The inference is drawn that stocks will become broken in assortment soon after the close-down, and that it will be difficult to have orders filled complete during the summer months. Local demand continues somewhat quiet. Jobbers' quotations from jobbers' list October 1, 1903, are as follows: Greater New York, 90 and 10 per cent. discount on all sizes, single and double strength; outside of Greater New York, 90 and 5 per cent. for single, and 90 and 10 per cent. discount for double strength Glass.

Linseed Oil.—A more active demand is reported for days when weather conditions are good, with a falling off in volume when conditions are unfavorable. This indicates that there is not much snap to the trade, and an absence of complete confidence in the immediate future. Purchases are mostly confined to jobbing lots for near by delivery. New York quotations for jobbing lots are as follows, according to quantity: City Raw, 42 to 43 cents per gallon; Out of Town Raw, 40 to 41 cents per gallon. Boiled Oil is 1 cent a gallon over Raw.

Spirits Turpentine.—An advance of ½ cent per gallon since our last week's report has placed Turpentine at a figure when purchasers are only placing orders for small lots, and these only from necessity. The advance in prices for some time has been continual, and they have reached a point which tends to keep buyers out of the market. Among the causes contributing to this condition is the end of the old crop and light receipt of supplies and probably a little manipulation of the market. The first of the new crop is expected soon after April 1, and while not estimated above the average lower prices are expected to prevail before May 1. Extremely low prices are not looked for. New York quotations are as follows, according to quantity: Oil Barrels, 77½ to 78 cents; Machine Made Barrels, 78 to 78½ cents per gallon.

SHOVEL MANUFACTURERS IN CONFERENCE.

(By Telegraph.)

A MEETING of Shovel manufacturers was held at the Fort Pitt Hotel, Pittsburgh, on Tuesday, 19th inst., the following concerns being represented: Wyoming Shovel Company, Wyoming, Pa.; Hussey-Binns Shovel Company, Pittsburgh; Pittsburgh Shovel Company, Pittsburgh; Penn Shovel Company, Warren, Ohio; Union Furnace Mfg. Company, Morrell, Pa.; Baldwin Shovel & Tool Company, Columbus, Ohio, and the Canal Dover Shovel Company, Canal Dover, Ohio.

George V. Willson of the Hussey-Binns Shovel Company was chairman of the meeting, which was called for the purpose of considering measures that could be adopted to put the Shovel business on a better basis than it is at present. For the past three or four years the Shovel trade has been in a very unsatisfactory condition, very low prices ruling. While it is true that Shovels have increased in price about a dollar a dozen in the last six months, yet the manufacturers claim that this is more than offset by the higher costs of raw materials, notably Handles, which have increased in price about 25 cents a dozen in the past year, and very scarce and hard to obtain. A general discussion took place as to what could be done to put the Shovel trade on a more satisfactory basis, but nothing definite was adopted.

Within the last three or four years several efforts have been made to form a combination to include all the Shovel interests, and thus endeavor to control prices and output, but these were unsuccessful. It is stated that an organization of independent Shovel manufacturers may possibly be formed, and another meeting to consider this project will likely be held at an early date. The fact is referred to that many of the leading jobbers in the United States are now furnishing Shovels to the trade at less than present prices asked by the manufacturers. This is due to the fact that these jobbers placed large contracts for Shovels some time ago when prices were much lower than they are now, and they are thus enabled to undersell the manufacturers.

WM. PHILIP H. ISRAEL died at his home near Baltimore, Md., on the 11th inst., having suffered a stroke of paralysis February 28, from which he never rallied. Mr. Israel represented the Irwin Auger Bit Company, Wilmington, Ohio, and other manufacturers of Hardware, soliciting trade in Virginia, Maryland, Pennsylvania, New York and other Eastern markets. He was a thorough gentleman of the old school, an efficient salesman and will be much missed, both by the manufacturers, whom he represented, and the jobbers within his territory.

TORREY W. SIBLEY, for many years engaged in the Hardware business at Essex Junction, Vt., died in that town March 12, aged 66 years. He was formerly engaged in business in Boston. He was for 10 years treasurer of the Essex Co-operative Savings and Loan Association and was a past commander of Sherman Post, G. A. R.

OLIVER BROTHERS PURCHASING COMPANY'S VIEW OF THE TRADE SITUATION.

The following letter is being sent out by Oliver Brothers Purchasing Company to its clients and is of interest to the trade at large as giving a broad view of the present condition of the market:

NEW YORK, March 18, 1907.

ON account of the newspapers and trade journals covering the ground so thoroughly and intelligently, we would not think of submitting this expression of our views as to market conditions if it were not for the fact that we have received a number of requests for same.

The Stock Market.

While the underlying reasons for the exciting conditions and radical declines in values during the past few days' time are still clouded with mystery, the merchants feel some gratification in the fact that the demoralization was confined to the stock exchange floors without producing as yet any disturbing effect upon the commercial and industrial interests of the country other than adding somewhat to the tightness of the money market.

Various opinions have been advanced as to the causes of the stock market panic, but the one carrying the greatest weight in well informed circles is to the effect that it was merely the result of a prearranged or concerted bear movement by powerful stock manipulators for their own personal gain.

The Money Market.

Supply and demand naturally affects the money market just as it does other materials, and while the present commercial prosperity and industrial activity continues, money, in sympathy with other materials, will remain scarce and dear.

It is natural also that during the recent stock market manipulations the money market should be made still tighter and rates of interest higher, but to a more pronounced degree at New York, where money is so greatly in demand for speculative purposes, than in the smaller cities throughout the country.

It became evident last fall that the bankers and brokers were preparing for some such emergency as experienced in the stock markets during the past few days' time, by making long margins and ample securities for loans, and the prosperous conditions of the country at large have been reflected in the fact that no failures have been reported as the result of the stock market demoralization and that no assistance was sought from abroad.

Present Conditions.

The majority of the producers of raw materials, as well as of finished products, are evidently still overcrowded with orders and materially behind in deliveries, but largely on account of orders carried over from last year, for while on the rising market the trade generally did considerable speculating, they learned by experience the necessity of anticipating their wants to a greater extent than in former times, and particularly during the winter months, when the freight traffic congestion is the greatest.

While the buying during the months of January and February was light, taking the country as a whole, this fact has not created any weakness in the market prices, but on the contrary the only changes recorded on the more prominent Hardware lines since January 1 showed advances.

Future Outlook.

Our reports from various sections of the country unquestionably indicate continued prosperity during the present year with a heavy consumption of goods and a maintenance of existing high values on the majority of lines. There is some tendency toward still higher prices during the spring months, although on account of the abnormally high prices prevailing for practically all of the Iron and Steel, Hardware and kindred supply lines, and in anticipation of a slight reaction during the summer months, with the uncertainty as to the outlook when the fall sets in, it appears as though the jobbers were buying more conservatively than for some time past. This is a wise policy, for while the merchants generally are taking a very optimistic view of the outlook for a prosperous year's business, in some quarters the belief is entertained that our cycle of prosperity will soon reach its turning point, and that before many months pass by we must look for a slackening in the demand for materials and a decline in values, and we must say that many of the merchants seem fearful of what might suddenly happen in the way of a radical slump in values or trade demoralization through a widespread lack of confidence in the future for one reason or another.

We all know that the present prosperous condition of trade cannot last forever and that sooner or later there must necessarily be a re-adjustment of values all along the line, but we repeat that there appears nothing in the atmosphere at the present time to indicate any immediate tendency in that direction, and our opinion is that the inevitable slackening in demand and re-adjustment of values will be gradual or evolutionary rather than sudden and demoralizing, and notwithstanding the exorbitant values of raw materials and many of the finished products. We base this opinion on the foresight and conservatism of our banking institutions in discounting an industrial upheaval by making due preparations for any financial emergency and also in the conservative policy of the United States Steel Corporation in its powerful and steadying effect upon the market.

If our opinion counts for anything we should say that when the reaction in prices sets in the lines most immediately affected will be those consumed by the railroads, for it seems quite evident that the publicity given to the scandalous financial methods of some of the railroad operators and financiers will serve to strengthen the movements in various States to a more rigid supervision and regulation of such properties, and in the meantime causing such lack of confidence in the public as to at least restrict extensions and improvements not already undertaken. In passing we are prompted to quote this passage from *The Iron Age:* "Conservative men are watching with solicitude the tendency toward the enactment of legislation hostile to the railroads and other large interests, and are questioning whether or not the checking of enterprise on the part of the railroads and the development and distrust in financial circles may not militate against the continuance of the existing prosperity."

Very conservatively expressed we think, for there are many who believe that the gravest danger to our country's welfare lies in this direction, that is: hostility to the railroads.

Raw Materials.

The principal ones of the cruder products entering into the manufacture of Hardware and kindred supply lines are Pig Iron (from which emanates Billets, Rods, &c.), Metal Scrap Materials, Ingot Copper, Pig Lead, Pig Tin, Spelter and Zinc and Timber, and all of which are still apparently scarce in proportion to the demand, and we might say extraordinarily high and firm in values.

It is true that the price of Pig Iron has weakened a little for deliveries during the last half of the year, yet the opinion prevails that it is due to a hide and seek game between the large Steel companies and the smaller producers and that Pig Iron can drop down about $2 per ton before showing any material effect on the prices of finished products.

Scrap Iron Material, while showing some weakness in prices during the past month, is now becoming scarce in proportion to the increased demand and assuming a radically firmer tone, with a strong possibility of higher prices.

Briefly, then, with the exception of Pig Iron, the future prices of which appear more uncertain at present, all of the other materials from which Iron and Steel and Hardware lines are produced are showing a continued firmness, with the prospects for still further advances, particularly on Ingot Copper.

Finished Products.

With the continued high prices prevailing for raw materials and labor and the difficulty the manufacturers of finished products are meeting with in obtaining sufficient supplies of material and labor and the healthy condition

of their order books, generally speaking, along with the promising prospects for a heavy demand upon them during the next few months' time, we repeat that it does not look as though there would be any reaction in prices in the near future. On the contrary, there are some evidences of the probability of further advances, for, while some few manufacturers have had the courage to take full advantage of the situation by demanding the highest prices the market would stand, there are many more timid ones who have not yet increased their selling prices in proportion to their increased cost of production.

Deliveries.

We still hear very serious complaints from the manufacturers and merchants from all sections of the country on account of their inability to obtain sufficient supplies of materials and proper service from the railroads, for it seems evident that the producers of raw materials are finding it (or making it appear) just as hard to satisfy their customers as the manufacturers, jobbers, retailers or other distributers are.

General.

We advise you to closely follow up your unfilled orders, particularly those entered at prices materially under the market, for while it is not the general disposition of manufacturers to do so, we know that some of the most reputable ones have sidetracked old orders taken at low prices to reap the benefit of the higher market prices on new business. When we hear, as we have so frequently during the past few months' time, of premiums above the market prices being offered and accepted for prompt deliveries for various materials, we are always prompted to ask which of the customers are made to suffer, and are not the producers accepting such premium offers acknowledging their unfairness to customers from whom they hold old unfilled orders. The fair rule for the producers of materials to follow is to execute each order in its proper turn, but the fact that such a rule is not rigidly applied suggests that the buyers giving the closest attention to following up their back orders are likely to receive some favors.

The recent disastrous floods in and about Pittsburgh will undoubtedly aggravate the situation materially by throwing the manufacturers greatly behind in their operations and shipments.

OLIVER BROTHERS PURCHASING COMPANY,
THOMAS E. OLIVER, President.

THE FLOOD AT PITTSBURGH.

THE worst flood in the history of Pittsburgh visited that city last week, practically all manufacturing plants located on the Allegheny, Monongahela and Ohio rivers being compelled to shut down Wednesday, the 13th, until Saturday, the 16th, when the water had receded sufficiently to allow some estimate of the damage done and a start made in cleaning up manufacturing plants that had been under water for three days. The official gauge of the Government showed a hight of 36 ft. 3 in., which was 4 ft. higher than the previous great flood in 1884.

On the banks of the Allegheny River, commencing at Sharpsburg and extending for a distance of about 4 miles, are almost countless manufacturing plants, among the largest of these being the mills of Moorehead Brothers & Co., the Crescent Works of the Crucible Steel Works Company, Hubbard & Co., Shovel manufacturers; the Carbon Steel Company, Park Works of the Crucible Steel Company, Pittsburgh Valve, Foundry & Construction Company, the Best Mfg. Company, Geo. A. Hogg Iron & Steel Foundry Company, the Shoenberger Works of the American Steel & Wire Company, the Wayne Iron & Steel Works, of Brown & Co., Incorporated, and probably 50 or more other small manufacturing plants, all of which were under water for a depth of 3 to 6 ft. for a period of 72 hr. Much valuable machinery was damaged and stocks of goods ruined by the water.

On the Monongahela River from Clairton, Pa., for a distance of nearly 40 miles, until Pittsburgh is reached, practically all the manufacturing plants, and they are almost innumerable, were under water. Great damage was done to the Edgar Thomson, Homestead and Duquesne works of the Carnegie Steel Company; the Rankin and Braddock works of the American Steel & Wire Company; the Clairton Works of the Carnegie Steel Company; the Demmler Works of the American Sheet & Tin Plate Company; the National Works of the National Tube Company at McKeesport, Pa., and many other manufacturing plants. The Homestead Steel Works of the Carnegie Steel Company was shut down for three days, this being the first time in its history that it was compelled to close on account of high water.

The amount of damage done to manufacturing plants was greatly increased by reason of the fact that it was not expected that the water would attain such great hight. Advices sent out by the official weather forecaster at Pittsburgh indicated an expected stage of 29 ft. in the rivers, while they rose to a hight of more than 36 ft. Only an approximate guess can be made of the damage sustained, but it is expected to reach a total of $10,000,000, and it may exceed that amount.

Most of the Hardware stores in the lower part of Pittsburgh suffered severe losses, as precautions which otherwise would have been taken were not observed, as it was not expected the water would attain the enormous hight that it reached. In downtown Pittsburgh the heaviest sufferers were Logan-Gregg Hardware Company, the J. C. Lindsay Hardware Company, Wolff-Lane Hardware Company and Steiner & Voegtley Hardware Company. All these concerns had large quantities of goods in their basements that were water soaked and either partly or totally damaged.

With their well-known push and vim, Pittsburgh merchants and manufacturers got to work immediately after the waters had receded to repair the damage and put their business houses and manufacturing plants in shape again. Already practically all traces of the flood have disappeared, but it will be some little time before damaged goods have been disposed of and an accurate estimate can be made as to the total loss.

Below Pittsburgh enormous damage was done to manufacturing plants in the Ohio Valley, which embraces the Wheeling and Steubenville districts; also in the Shenango Valley, which embraces Sharon, New Castle, South Sharon, Greenville and other manufacturing centers, and also in the Mahoning Valley, which embraces the Youngstown and Niles districts. In the Wheeling and Steubenville districts, the Wheeling Steel & Iron Company, the Pope Tin Plate Company, the La Belle Iron Works and the National Tube Company suffered heavy losses by the flood. In the New Castle and Sharon districts, the Carnegie Steel Company and the American Sheet & Tin Plate Company were heavy sufferers, the blast furnace, steel works and tin plate plants of these concerns being under water for several days. The loss in the Youngstown District was comparatively light, as these places are located above high water mark, and the plants in this district were only slightly damaged.

The Pittsburgh flood of 1907 will go down in history as the highest and the costliest flood in the history of the city. The flood will interfere materially with shipments for some few days, and will throw the mills and factories further back in deliveries.

THE DE HAVEN MFG. COMPANY has been incorporated under the laws of the State of New York, with capital of $400,000, fully paid up, for the purpose of taking over the business formerly carried on under the same name, by Hugh De Haven, proprietor, 50-54 Columbia Heights, Brooklyn, N. Y. There will be no essential changes in the policy of the company, Mr. De Haven continuing the direction of its affairs as president, and it is the intention to increase the business as far as possible, both in the Ring Traveler department and also in the iron and steel specialties, as well as in the heavier lines of iron and steel. An addition has recently been made to the plant of over 6000 sq. ft., which will enable the company to increase its output and manufacture a more varied line than heretofore.

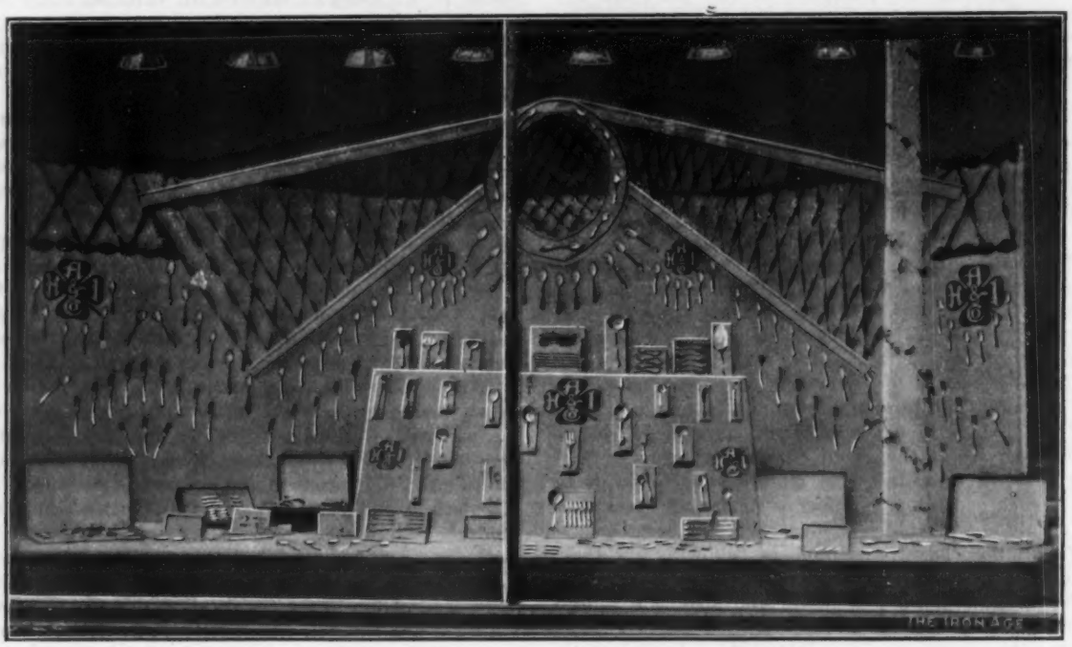
TRADE WINNING METHODS.

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

SILVER PLATED WARE WINDOW EXHIBIT.

ALBANY HARDWARE & IRON COMPANY, Albany, N. Y., gives a good deal of attention to its window exhibits, and finds that sales resulting from enterprise and intelligence in this regard fully justify the labor and expense involved. Displays in the company's windows are frequently changed, no one exhibit remaining more than a week usually. The attention of passersby is thus commanded to a greater degree than if the exhibitions in the windows were long standing and allowed to become too familiar.

One of the company's recent displays is reproduced herewith. It represented Silver Plated Ware, of Oneida Community make, and will be recognized as a tasteful and attractive exposition of this line. The background was of white sheet wadding, the sheets being separated so as to lay the rough side out. The contrasting color was emerald green crepe paper. The goods were secured in place by 5/8 in. No. 18 brass escutcheon pins, which did not show. We are advised that sales of the goods were very flattering during the time they held forth in the window and for a considerable period afterward.



Plated Ware Window Display of Albany Hardware & Iron Company.

A. H. & I. Company's Trademark.

In the exhibit it will be noticed that judicious use is made of the artistic trademark of the company, of which a separate illustration is given herewith. The lettering of the trademark is white on a background of green. This trademark is used quite freely by the company, particularly in its newspaper advertising bearing on each weekly change of windows and in labels on special goods with which it is desirable to identify the name of the house, the size used varying according to requirements.

SEVEN-DAY ANNIVERSARY SALE.

THE HAWKS HARDWARE COMPANY, Goshen, Ind., signalized the fifty-second anniversary of the establishment of its business in that city with a seven-day sale, beginning on a Saturday morning and ending on the following Saturday night. During this sale specially attractive prices were offered to cash buyers. Relative to the anniversary and the sale marking it a large eight-page circular of newspaper proportions was issued, in which attention was called to some of the lines handled by the company and the prices named on them. During the sale all kinds and sizes of Nails larger than 3d. were sold at 2½ cents a pound. Carpet Tacks of any size could be had at 1 cent a paper, 10 cents a dozen papers. Special hour sales were also held daily, particulars in regard to which were published in the local papers. During the continuance of the sale the store was open every evening, but closed during the noon hour and from 6 to 7 p.m. The circular above referred to also contained some reminiscent matter in the shape of news items and advertisements published in one of the local papers 52 years ago.

THE LEGGETT-WISDA HARDWARE COMPANY, Ord, Neb., has commenced the publication of a house organ, the first number being the spring edition. It is a well printed pamphlet of eight pages, 6 by 9½ in., and covers a variety of season goods with illustrations and prices. Attention is called to the firm's 10 cent counter, which is referred to as "always a source of profit" to its customers. A clean up of the large Dish stock, including Glass and China Vases, Cups and Saucers, Celery and Spoon Trays, &c., was announced. During March a 15 per cent. discount on Queensware patterns will be given to all purchasers of this line.

ARTHUR AUGUSTUS SAMMIS, formerly a Hardware merchant at Providence and of late years employed at the Hardware store of the Union Hardware Company in that city, died at Providence, March 17, aged 53 years. Death resulted from an attack of pneumonia. He was a native of Providence, the son of Esson Sammis. He was prominent as a Mason and was a member of St. John Commandery of his home city.

Selling Organization For Foreign Trade.

THE American Ambassador at a European capital, himself an ex-president of one of our largest steel companies, remarked a year or two ago, when discussing means of extending foreign trade, that American manufacturers must be blind if they did not maintain a European branch office to take charge of the development of their foreign business. It was suggested in reply that comparatively few American manufacturers are multimillionaires. Yet, while the expense involved is one of the great deterrents, it is undeniable that any adequate organization for foreign work ought to include a European establishment of some sort, and the more complete, responsible and independent the better.

How Manufacturers of Harvesters Develop Business.

Perhaps the most striking example of American organizations for the control and development of foreign business to-day is to be found in the European offices of our manufacturers of harvesting machines. A reference to the methods which they are understood to pursue will be instructive to manufacturers generally. It should be understood, however, that what follows is not based on inside knowledge of the organizations in question, but that it professes to be no more than the result of *ex parte* observations by a competitor on the ground.

Any American manufacturer who visits France, Germany, Russia or other European countries in the attempt to market any form of Agricultural Machinery or Implements, will immediately get in contact with the harvester companies' organizations, and probably into competition with their methods. Manufacturers of the Implements referred to, as well as of a good many Hardware lines, must perforce appeal to practically the same merchants, wholesale or retail, who handle harvesting machinery. The visiting manufacturer will find much the following state of affairs existing:

Dividing the Territory.

The business of the Harvesting Machine companies is all directed and virtually controlled from general offices, usually in Paris or Hamburg. This applies not only to the so-called "trust," but to almost all of the independent manufacturers, and includes not only all but one of the American companies, but at least one, and that the largest, of the Canadian factories. In some cases the territory is divided between two or three European branch offices, but the principle is the same. There is an American manager, assisted by the necessary office force, sometimes American, sometimes of foreign extraction. To all intents and purposes these offices are independent, self-contained, proficient business houses. They have full control not only of sales, but also of collections and of the delivery, and that in satisfactory working order, of the Machines sold.

How Some Sections are Covered.

In some cases the general agency for a specific territory, France, for example, is placed in the hands of a large wholesale merchant who proceeds to develop his own business in the line by securing innumerable retail merchants throughout his territory as his subagents. In other instances the establishment of the Harvester Company itself fills the position of general agent, and goes directly to small merchants whom it secures as its subagents. In this case it is necessary to maintain their own selling organization. A corps of salesmen is put in the field, usually composed partly of Americans brought over from the United States for the purpose, and partly of foreigners, whom the 20 or more years during which American Harvesting Machinery has virtually controlled the world's markets, has trained to competency in considerable numbers. The expense of such a corps of traveling salesmen is offset, of course, by the difference in price at which Machines are invoiced to general agents and subagents.

Suiting Methods to Conditions.

A combination of the two methods of selling goods is usual. In one territory the office itself undertakes the general agent's work, in another the general agency is put into the hands of a wholesale merchant, although gossip whispers that it is ultimately expected that the companies intend to do away altogether with general agents. Thus a company may have its own organization for France, but in Germany or in Russia may do its business through a general agent. In any event the office has its "blockmen" in the field, very much as is said to be the custom in this country, to supervise the work of its general agent, as well as its subagents, and of its own "expert" mechanics. It is a vital part of the propaganda of all the Harvesting Machine manufacturers to furnish their agents during the season with competent mechanics to assist in setting up the new machines, to repair machines that may get out of order, and generally to instruct new and uninformed buyers of machines in their proper manipulation, adjustment and care.

A Corps of Mechanics to Set Up and Repair.

These experts are maintained by the manufacturers and travel for them and at their expense wherever and whenever the agents require their presence. Most of them are Americans, and the Harvester manufacturers seem either to have had better luck or to have exercised better judgment in the selection of their experts than has been the case with most other manufacturers of machinery who have been called upon to send abroad expert mechanics. It is very likely the case that the Harvesting Machine manufacturers have frequent occasion to complain of their experts, but it would appear that in a great many cases, not only in the experts, but also sometimes in salesmen and blockmen they have succeeded in securing very competent men. Many of them appear to have been shrewd farmer boys from the West or Northwest, or foreign or of mixed parentage, who are not only competent mechanics, so far as their own line goes, but also and equally as important a consideration, speak at least one language other than English.

A Chance Gathering of Harvester Specialists.

A very characteristic gathering of harvester representatives was that encountered a year or two ago in a little Spanish village of 3000 population. There were gathered together in the little hotel in this out of the way village two blockmen and four experts of American Harvesting Machine manufacturers. One of the blockmen was a farm-bred American, born of a French mother, whose father was a German, speaking both languages as fluently as English. The other was an American who had received his training in his company's factory, but from long experience in Mexico and South America spoke Spanish almost as perfectly as his native language. The experts were all of them farm bred, although two only were of American birth. Both of these two were of French parentage and, brought up interchangeably in the French and English languages, were equally as much at home in one as in the other, and thus able more quickly to pick up a helpful smattering of Spanish. Of the other two experts, one was a Dane, the other a Hollander, by birth, and each of them, in addition to his native tongue and English, was fluent in French, German and Spanish.

Linguistic Advantages.

This point is emphasized, for the advantage of speaking the language of the people among whom a man is working is exceedingly important in itself, in contributing to a better appreciation of the character of the people with whom he comes in contact, and tending to greater versatility and adaptability, all points in which many so-called experts sent abroad by other manufacturers of machinery have proven very deficient. It would seem that manufacturers of agricultural machinery, at least, might very easily pattern after the practice of the harvester people and readily find shrewd and clever farmer boys, ingenious, and familiar either with their own or with similar lines, who, with a little training, would make competent representatives or "experts."

Nurture.

It will be observed that the Harvesting Machine companies' customers are well taken care of. The companies

do not consider their interest in a sale ended when the goods are put on board ship. In most cases their offices insure satisfactory deliveries to customers. Blockmen are maintained in the field to see that the best possible efforts are made to extend sales, and that existing agents are those most desirable or the best obtainable. Experts are supplied to further the extension of business by seeing to it that the agent's customers, that is, the individual farmers, are satisfied with their Machines and know how to operate them. But these companies go even further—they grant easy terms of payment. And all this in spite of the fact that a very considerable portion of the goods sold are not placed at the liberal prices prevailing here at home, but at wholesale discounts, corresponding to the immense volume of the business.

The Business of One European House.

In this connection it may surprise many readers to know that a large French wholesale merchant, the general agent for France of one or our harvester manufacturers, is understood to buy annually over $1,000,000 worth of these Machines. Customary terms in Europe for Harvesting Machines are, say, one-quarter on delivery, balance after the harvest. Thus Machines may be delivered in February or March and not fully paid for before the following September or October.

Flexibility in Determining Credits.

And in case of need, the harvester companies go even still further. When a crop failure occurs they have proven themselves willing to help their agents over the crisis by extending the time for final settlement until after the next succeeding harvest. Naturally the very thorough and adequate organization of the companies' foreign offices justifies this procedure when perhaps it would be out of the question had they no competent supervision of affairs within their power. For example, when time is extended on a payment a very careful count of the machines actually left over in an agent's stock is made by the company's blockmen or experts.

Seeking Business Where It Originates.

However, the policy of the harvester companies may be regarded, and whether or not their methods result profitably to them, the fact cannot be gainsaid that their organizations abroad are thorough and aggressive, as is probably the case in no other branch of American industry in foreign fields, unless it may be in phonographs or typewriters. The methods described result in practice in a certain degree of hardship to other American manufacturers of various forms of Agricultural Implements who are not able or are not in a position to imitate them. The general agents and subagents of the different Harvesting Machine manufacturers, it must be remembered, are precisely the same dealers whom these other manufacturers of kindred goods will consider most desirable for their own customers. These dealers often have difficulty in comprehending why, if they obtain such assistance and terms from makers of harvesting machinery, manufacturers of other goods who appeal to them should not follow a similar method, or inaugurate one if they are really in earnest in seeking trade.

In a recent issue it was stated that Wm. Simpson of Minneapolis, Minn., had purchased the business of the Northern Hardware & Supply Company, Menominee, Mich. It should be explained that Mr. Simpson has acquired only the retail part of the company's business. The Northern Hardware & Supply Company will continue in the wholesale line as heretofore.

H. Heller, 62 Reade street, New York, importer and exporter of many kinds of Mechanics' Tools and Hardware, is also handling the lines of Pliers and Cutting Nippers made by the Utica Drop Forge & Tool Company, Utica, N. Y. The imported Hardware is of German manufacture and includes Brace Bits, Gimlets, Pliers, Nippers, Key Rings, Kitchen Knives, Packing Needles, Sail Needles, Zig-Zag Folding Rules, Horseshoe Magnets in horseshoe and other shapes, and various other Hardware Specialties.

NEW ENGLAND RETAIL HARDWARE ASSOCIATION.

THE March meeting of the Board of Directors of the New England Hardware Dealers' Association was held at the rooms of the Boston Merchants' Association, Boston, March 12, with President John B. Hunter in the chair. The matter of the annual convention of the National Association, to be held in Boston in June, came up for consideration. President Hunter was chosen chairman of the Reception Committee, with power to appoint the committee. A Press Committee consisting of Secretary F. Alexander Chandler, Thomas F. Anderson of the Boston Municipal Publicity Bureau and John Nelson of *The Iron Age* was appointed. A letter from the New England Telephone & Telegraph Company extending to the association free telephone service to all points on its line during the convention was read. Applications for membership were received from the following merchants: Jas. R. Hughes, West Lynn, Mass.; H. L. Perry, Mahun, Perry & Co., Attleboro, Mass.; Geo. A. Gore, Beverly, Mass.; C. F. Paige, C. F. Paige & Co., Incorporated, Athol, Mass.; H. W. Morse, Meriden, Conn.; Jas. De F. Phelps, F. S. Bidwell Company, Windsor Locks, Conn.; F. C. Bidwell, J. C. Bidwell Company, Hartford, Conn.; W. H. Burchell, N. T. Bushnell Company, New Haven, Conn.; Geo. J. Bassett, Jno. E. Bassett & Co., New Haven; L. G. Rosenberg, L. G. Rosenberg & Co., New Haven; Irving C. Treat, Clapp & Treat, Hartford; Ralph E. Page, Hartford; Fred. J. Snow, Snow Hardware Company, Rockville; John M. Page, Naugatuck, Conn.; Chas. H. Stone, Knowlton & Stone, Keene, N. H.; T. S. Wartlett, Lowell, Mass.; J. Wallace Grace, Wakefield, Mass.; C. A. Noyes, C. A. Noyes & Co., Brockton, Mass.

BECK & CORBITT IRON COMPANY.

THE BECK & CORBITT IRON COMPANY, St. Louis, has acquired the business of the Paddock-Hawley Iron Company of that city. As a result of the transaction the New Paddock-Hawley Iron Company, a Nebraska corporation, will permanently cease operating in St. Louis. The Paddock-Hawley Iron Company was bought last July by Baum Bros. of Omaha, and was reincorporated in Nebraska as the New Paddock-Hawley Iron Company. The Nebraska corporation will continue in existence, with headquarters at Omaha, but it has abandoned the St. Louis field.

C. T. Brace, for 15 years past secretary and sales manager of the Paddock-Hawley Iron Company, has been elected vice-president of the Beck & Corbitt Iron Company. Other officers of the Paddock-Hawley concern may be taken into the Beck & Corbitt Iron Company. Most of the Paddock-Hawley salesmen and other employees have been taken over, thus combining the working machinery and stock of the two companies. As soon as the Paddock-Hawley stock is disposed of in the regular order of trade, all the business will be done in the Beck & Corbitt Iron Company's buildings.

The Beck & Corbitt Iron Company may increase its capital stock, but no action has been taken, as yet, on this proposition. The company has additional property on Main street, between Biddle and Ashley streets, and it will probably construct an annex to the headquarters.

The advantages of Wired Glass no longer need explanation when matters of protection against fire are given any attention at all, for the experience at Baltimore and at San Francisco proved abundantly the resistance to destruction offered by glass reinforced with imbedded wire mesh. Sheet metal workers will be interested in this connection to learn that Powers & Williams, Streator, Ill., are making a specialty of Wired Glass as well as ordinary Skylight Glass, aiming to assist sheet metal shops to have manufacturers employ Wired Glass in their glazing, if for no other reason than to reduce insurance charges. The Wired Glass can be obtained, for example, with ⅞-in. mesh and of ¼-in. ribbed surface. For factory windows Powers & Williams regard ⅛-in. Ribbed Glass much superior to Window Glass.

North Dakota Retail Hardware Association.

THE tenth annual convention of the North Dakota Retail Hardware Association was held at the Bijou Theater, at Minot, Tuesday, Wednesday and Thursday, March 12, 13, and 14. Although this convention was, because of the exceptional severity of the winter, postponed from February 5, 6 and 7, there was a large attendance present when President Emery called the meeting to order. Many of the Hardware manufacturers and jobbers who have been following the Hardware convention circuit through Wisconsin, Minnesota, Iowa and other States were represented by a very large number of their traveling men, with exhibits. The Leland Hotel, the headquarters of the Convention, was crowded throughout. The overflow found its way to the Hotel Morrill, and in every Hardware store there were also displays, while some of the exhibitors were forced to seek space elsewhere.

Acting in accordance with the request of the executive committee of the association the exhibitors closed their

H. F. EMERY.

W. R. McINTOSH.

displays during the hours that the convention was in session, but at all other times they were open and at home to the North Dakota merchants, who were present in good numbers.

Despite the fact that the railroad companies had made a great reduction in their rates for the first convention and had promised to give lower rates at this one they went back on their promises and refused to make any concessions at all. The statement was made that at that time there was no discussion antagonistic to railroads in the North Dakota Legislature, but now that there was they refused to make any excursion rates or any concessions whatever.

President's Address.

An executive session was held on Tuesday afternoon but the formal opening of the convention took place on Wednesday morning. President Emery, of Fargo, called the meeting to order, and Rev. N. E. Ellsworth offered a prayer for the success of the convention. Mayor Greenleaf, of Minot, welcomed the visitors to the city, President Emery responding for the association. Mr. Emery then delivered his annual address, as follows:

Let 1907 be what it may, 1906 will stand out as one of the greatest years in the development of the Northwest, and in this advancement North Dakota has taken a prominent part. Years like 1905 and 1906 show to us the great possibilities and the probabilities of North Dakota. Give us sunshine and rainfall in proportion to the strength of North Dakota soil and we will be too busy to even read the notices in the papers about the troubles of the Secretary of the Treasury and Wall street. North Dakota is a producing State, and our market is the market of the world. In the development of a State no one factor plays a more prominent part than does the Hardware merchant.

A COMMUNITY CAN BE PRETTY WELL SIZED UP

by the makeup of its Hardware store. Prosperous and up to date Hardware merchants represent a prosperous community and it has well been said that "Hardware is the barometer of the times."

We have come together at this time that we may talk over and devise ways and means to further aid in holding personal greed (which shows its hands through corporations) in check and making it understand that the law of right must be obeyed. With prosperity showing on every hand, with orders pouring into the retail store, with tin shops full of work, with stoves to be blackened and times so good that we cannot find a "blacker," is it to be wondered at that so many merchants take so little interest in association work?

It is not the activity of the corporations, trusts, combinations and mail order houses that is to be feared, but the

INACTIVITY AND DEADNESS OF THE BUSY MERCHANT

and the quiet citizen. The tariff law when first enacted was a grand thing, but the prosperity and growth of this country was so great that the same good tariff was the means of starting some greedy institutions that have shown their willingness to take advantage of the help extended, and so my words to you in retiring, as your president for the last four years are—Be up and doing, help your Executive Committee, your incoming president and your secretary whenever you can, that we may be in the best of shape to stop the growth of the mail order business which has shown its hands in prosperous times and cannot but be a menace to trade unless checked when the high tide shall subside and when quietness follows, though it be for a short time, for history has proven that extra good times are followed by a lull in trade.

Let me remind you not to be impatient because we are not able to solve all the problems at once, but remember that great victories are won by fighting the battle of to-day and being ready and willing to take up the new questions of to-morrow.

Credits.

The discussion of the subject of credits was a prominent feature of the convention. Among those who made addresses were the following credit men representing jobbing houses: F. L. Macomber, Hibbard, Spencer, Bartlett & Co., Chicago; C. D. MacLaren, Farwell, Ozmun, Kirk & Co., St. Paul; Mr. Hopkins, Janney, Semple, Hill & Co., Minneapolis, and Mr. Burdick, Hall-Robertson Hardware Company, Fargo. Messrs. MacLaren, Hopkins and Burdick touched on the topic somewhat briefly. Mr. Macomber made the principal address, in part as follows:

This subject has many branches, but the particular phase of it in which you are most interested are those which find expression in your own counting rooms—that

C. N. BARNES.

H. T. HELGESEN.

affect the expansion of your business and increase or decrease your profits.

I shall touch on retail credits only to say it is a science more studied and better understood by the men behind the counters of Hardware stores of this State than by myself.

In the wholesale Hardware business 99 per cent. of the business transactions are handled on credit. Perhaps two-thirds of the sales are discounted, but even where the settlement is made in 10 days credit comes into play and a proper basis for it should exist.

CHARACTER, CAPACITY, CAPITAL.

What are the elements to be considered by the seller who thus, through faith in the buyer, parts with his property on credit terms? 1, Character; 2, capacity; 3, capital.

Neither one is under all circumstances indispensible, but in the ideal credit risk all three are present. They are important in the order in which I have named them. Rectitude of character—the unswerving purpose to deal honestly with all men, customers as well as creditors—is the best asset a merchant can have. The confidence it inspires brings and holds trade, coupled with a moderate degree of capacity is an almost certain guaranty of success. Good character may be said to include temperate habits and agreeable manners. It cannot be claimed either by a drunkard, spendthrift or grouch. An ugly overreaching disposition is not an ear mark of good character.

THE CAPACITY OF A MERCHANT

is measured by his age, experience, education, business training, health, energy and general ability. The shortcomings of merchants in the payment of their debts are chiefly the result of inexperience. Some of the more frequent mistakes in business policies thus brought about are over-trading, capital, over-stocking, extending too much credit, unwise credits, failure to secure sufficient profit, inadequate insurance, lack of punctuality in commercial obligations. In analyzing the financial statements of merchants it will usually be found that where one of these elements of weakness is present the others exist. The trader who thinks it unnecessary to give attention to his own obligations at their maturity trusts the consumer who settles only when compelled to. He is equally careless in buying and in figuring his profits. In the matter of insurance against fire he takes long chances, as his creditors frequently find to their sorrow.

That unquestioned character and a reputation for business capacity or ability are, in the estimation of the credit man, the prime requisites is apparent because in a number of our States, your own included, the exemption laws are so generous to a debtor that a fair sprinkling of the merchants cannot be forced to pay—if it is not their choice to do so. And yet, with few exceptions, these merchants of modest means find no difficulty in securing liberal lines of credit. The merchant may be poor, but with the reputation for right purposes, energy and good sense, he will, through the confidence inspired in him by others, command capital.

MERCANTILE RISKS.

The launching of almost every mercantile enterprise is attended by some doubt as to the outcome. It is a venture. The merchant takes the risk. There may be sickness, grasshoppers, foolish competition or any of the myriad or unforeseen and unfortunate developments. A financial rough and tumble on Wall Street, or even as in '93, the collapse of a bank on the other side of the ocean may undermine public confidence and precipitate sudden and widespread panic: Hence, while character and capacity are the most indispensable qualifications of a good credit risk, capital is likewise very desirable, for without it, in the event of misfortune, the burden of loss must fall, to some extent upon the creditor.

In the years when the Middle West was being settled the larger profits being realized by the retailer and jobber enabled the latter to take more risks. Time was when the profits in the wholesale trade could bear the loss sometimes as high as 1½ per cent. of the sales. It was then not uncommon for the jobber to furnish more or less of the capital employed by his customer. If the customer succeeded well and good. If he hung on a few years and went under the profits realized before the crash by the jobber might offset the loss. In those days transportation was slow, there were few discounters, lines of credit were large.

With the closer settlement of the country and increasing competition, profits in the wholesale lines have narrowed until any loss in excess of one-quarter of one per cent. puts the managing partner of the business in the attitude of the man from Missouri toward the credit department. "He has to be shown" that the credit man is not asleep. More than ever before it is desirable that the retailer who aspires to be considered in first-class credit should possess capital enough to guarantee payment of his liabilities in the event of fortune frowning upon him.

SOURCE OF INFORMATION.

The chief source of information upon which wholesale credits are based is, as every one knows, the mercantile agency reports. Some believe these reports are highly colored and distorted through the bias or prejudice of local investigators, but I do not think that this is often so. The mercantile agencies certainly realize that their clients want accurate information, and that the repute of and demand for their services cannot be great if any considerable percentage of their ratings are either grossly over or underestimated. Let it be said in their favor that if the credit seeker will not disclose his financial condition it is frequently impossible to secure the facts elsewhere.

People are more or less ostentatious in the display of their possessions. Barring the assessor, we don't care who knows about the assets, but as to the debts there is much secretiveness. Ordinarily the applicant for credit alone and none other can make a complete and accurate showing of these. Not even his banker is able to speak authoritatively as to his liabilities. It is for this reason that a financial statement made by the applicant himself for a mercantile agency or direct to the creditor is the best and safest source of information. Written and signed statements are preferred, because in expressing themselves in that manner they are more thorough and exact than when speaking orally.

It is natural for even honest men to overestimate their assets, and to underestimate their debts, and this tendency is more pronounced in verbal statements, but if the statement is in writing and signed and the maker of it, along with other assets, owns a good character, it is a fair and shining light pointing the pathway to be followed with safety by the creditor.

One of the best things the credit system does for those who use it is to bring the buyer and seller together under all kinds of circumstances, in prosperity as well as adversity; to make them better acquainted and to know each other more closely. It broadens us and makes friends for us; and, after all, these are the objects and results most to be desired from our business relations with each other.

Advertising the Store.

There was some discussion of store advertising methods, in the course of which J. A. Roell, Minot, spoke as follows:

I think the best advertising is keeping the store up to date and goods clean, and having salesmen who are good judges of human nature to tell what a party wants and about what priced goods he should buy, and able to talk goods intelligently. Next to that is newspaper advertising—good, clean newspaper advertising, right to the point and always accompanied with prices. I don't think it pays to advertise anything in display unless you have a price on it. The price always talks. I know if I get a circular and don't see any price mentioned in it it is usually relegated to the waste basket. I judge that is the way with consumers, the way they would treat an advertisement in the newspapers. I don't know that I ever got any good results from advertising where I did not mention prices and I invariably use electrotypes. Jobbers and manufacturers will supply a man with any cuts he has a mind to ask for. There are other places where you can get cuts at a very nominal price, and I got several hundred a year ago from a house that makes a specialty of them, and in all my advertising I use the cuts and in this way I find I get results.

Borrowing Money to Discount Bills.

That it was advantageous to borrow money to discount bills was pointed out by several merchants when this question was brought up. J. S. Cole, Lisbon, made the following remarks:

I would advise every retail dealer to discount his bills if possible, even if he has to borrow the money to do it, and if your credit is good enough to buy the goods on time your credit should be good enough at the bank to get the money to discount the bills. You all know 30 day goods are 1 per cent., and 60 day goods are 2 per cent. and Stoves and so forth, 5 per cent. In buying, if you can get any future dating, get it, and get all you can, and then go after the discount, and get all the discount you can. Every cent you can save in discount is that much profit on your goods.

Touching especially on the objection made by some merchants as to the difficulty of discounting small bills, President Emery said:

I have heard a great many merchants say that one of the disagreeable features of discounting was that there were so many little bills they could not discount as the discount would not amount to as much as the postage. I believe there is not a jobber who would not be willing to make a special arrangement with Hardwaremen to discount twice a month, so that you might accumulate these little bills and discount them all at one time, say on the 15th and 30th of the month. If there is any man who would like to discount his bills there is no doubt but what he will be given an opportunity.

Resolutions.

Among the resolutions adopted were the following:

Resolved, That this association is opposed to any legislation looking toward the establishment of a parcels carrying system in connection with the Post Office Department of the country at this time.

Resolved, That we believe it would be advantageous and therefore we favor a reduction from 2 cents to 1 cent on ordinary letter postage.

Resolved, That the association condemns the action of the different railroad companies in withdrawing their agreement giving the members reduced rates for the convention, and considers this act of theirs as most unbusinesslike.

Resolved, That we express our thanks to the entire jobbing interests of the country as well as to manufacturers of all the various products for the displays made and the interest manifested, and for sending representatives with papers treating on their various products and the different methods of conducting business.

Resolved, That we approve of the action of the several papers in refusing advertisements of concerns detrimental to the business interests of the convention.

Election of Officers.

The election of officers resulted in the choice of H. F. Emery, Fargo, for president, this being his fifth election. H. B. Allen, Fairmount, was chosen as first vice-president, J. A. Roell, Minot, as second vice-president, and N. Halverson, Aneta, as third vice-president. C. N. Barnes was re-elected secretary, as was also H. T. Helgesen, Milton, treasurer. S. T. Bostwick was elected a member of the executive committee. W. R. McIntosh, Bottineau, was chosen as delegate to the National Retail Hardware Convention in Boston in June.

Fargo was chosen as the scene of the 1908 convention.

PAINTS AND THE NORTH DAKOTA PAINT LAW.

Both sessions, morning and afternoon, on Thursday were devoted to the discussion of Paints and the Pure Paint law of North Dakota. Several very interesting and able addresses were made by well-known experts in this line. Dr. G. W. Thompson of New York City, representing the National Lead Company, was the first speaker, his topic being "White Lead; Its Advantages as a Paint Pigment." In the course of his remarks he introduced a number of boards which illustrated the results of painting with differently constituted Paints. Dr. Thompson took up the entire morning session, and was warmly applauded at the close of his address. He spoke as follows, in part:

Dr. G. W. Thompson's Address.

North Dakota has the good fortune of having successfully adopted, and successfully enforced, the measures which result in the sale in that State of pure medicines, pure foods and pure Paints. In this North Dakota has taken the lead, and we may feel assured that the people of other States are glad to know that you have done so much for the honest manufacturer for the sale of merchandise within your borders. Not merely has North Dakota passed laws, but these laws have been enforced, and enforced fairly, with a due regard for the interests of the people of the State. If the spirit with which a law is enforced is a fair and equitable spirit, defects that may exist in that law may at times be overcome. In North Dakota the administration of these pure commodity laws has fortunately devolved upon a man who has, in every case, sought to carry them out in a spirit of fairness toward all concerned.

White lead is a Paint pigment, and as a Paint pigment it has been used since the beginning of the Christian era. We have spoken of white lead as a pigment; by this we would explain that all Paints, properly so called, are mixtures of a liquid or vehicle and solid particles which we call the pigment. White lead is a chemical compound and when manufactured with care should contain about 69 per cent. of carbonate of lead and 31 per cent. of hydrate of lead combined in a chemical union.

In order to judge fairly and to have a reasonably clear understanding of the merits of white lead as a Paint pigment it is necessary that we should discuss briefly the general subject of Paints.

PAINT MAY BE DESCRIBED

as a mixture of solid particles of liquid vehicles, which can be spread out on a surface by means of a brush, whereby the surface is decorated and protected. A Paint so applied should, after a reasonable exposure to the air, become changed into a more or less hard and elastic film. This change is due to the oxidation of the vehicle, whereby it is changed into a solid, elastic substance, binding the particles of the pigment together. Such a Paint film when exposed to the weather has considerable durability and, insofar as it is durable, it protects the surface to which it is applied.

Students of Paint have entered into very learned discussions as to whether in a Paint the pigment protects the vehicle or whether the vehicle is the life of the Paint. To my mind, in a properly constituted Paint, both the vehicle and the pigment are of equal importance. All discussions as to their relative values are as useless as the discussion of whether the husband or wife is the more important member of the human family.

LINSEED OIL.

There is, generally speaking, but one Paint vehicle, and that is linseed oil. There are other materials used with linseed oil in paints, such as turpentine and benzine, but these can be considered nothing more than auxiliators, as they evaporate entirely after the Paint has been applied and simply enable the painter to get more nearly the result he desires. Linseed oil is to-day the Paint vehicle, and while lots of attempts have been made to prepare other vehicles, nothing worth considering in a commercial sense has made its appearance. Starting then with linseed oil as the Paint vehicle which we are compelled to use, and which we are fortunate enough to be able to use, the question arises, what Paint is there which, by itself, can be used with linseed oil to form a good Paint without the addition of any auxiliator? The answer is, that of white pigments white lead is the only pigment which has been successfully used in conjunction with linseed oil alone. This is not a theoretical statement, but a plain fact.

I do not mean to say that some painter has not at some time mixed zinc oxide and linseed oil, without other additions, and applied it, but that such a practice and such an application has not been successful commercially. Nor do I say that sublimed lead has not been mixed directly with linseed oil alone and applied by some painter, but simply that if this has been done it has not continuously been done in a commercial way so as to meet general painting purposes. The same is true in regard to lithophone, an admirable pigment in its way, but one that has not as yet been used alone with linseed oil in the production of a commercial Paint, but whose use has been principally in connection with varnishes in the production of Enamel Paints.

And we do not say that if any one has been so foolish as to mix barytes alone with linseed oil he may not have applied this to some surface—but we do say that if anybody has done this he has not been successful in any attempt which he may have made to persuade the public into adopting his plan as a commercial proposition. And what is true of barytes is true of sulphate of lime, is true of carbonate of lime or whiting, is true of silica, silicate of magnesia, &c. The fact remains that, as we have stated, no white pigment other than white lead has been mixed with linseed oil alone to make a successful commercial Paint.

ZINC OXIDE CANNOT BE SUCCESSFULLY USED.

By way of illustration, it may be stated without fear of contradiction that zinc oxide cannot successfully be used with linseed oil alone for general painting purposes, for the reason that zinc oxide when thinned with linseed oil to a consistency proper for painting takes so much oil that when applied to a surface the particles of zinc are so far separated that they have lost considerably their covering or hiding power. On the other hand, when thinned to a consistency proper for painting white lead has a covering or hiding power unequaled by any other white pigment.

When we speak of white lead as being the only white pigment which has been successfully used alone in conjunction with linseed oil as a Paint, we have to bear in mind that most Paint is applied with a brush, and most Paint has for its purpose the hiding of the surface painted. What is wanted, therefore, in a Paint that is applied by the brush is that when applied the brush marks shall flow out and disappear, leaving an even surface. This also is a quality which is possessed only by white lead among the white pigments, provided, of course, that they are used alone for the purpose of hiding the surface to which they are applied.

STRAIGHT WHITE LEAD AND LINSEED OIL PAINT

properly applied to a surface will show no brush marks when dry. This is because there is practically no chemical reaction between the white lead and the linseed oil with the result of a thickened mixture; and further because the linseed oil, on its oxidation upon exposure to the air becomes at first more limpid, especially the more it is brushed, allowing all brush marks to flow out. Zinc oxide, unfortunately, cannot be applied when mixed

with linseed oil alone, so as to obtain a reasonable degree of covering power without showing the brush marks.

We are not prepared to say that sublimed lead lithophone may not be mixed with linseed oil and applied to the surface without showing brush marks. With zinc oxide, however, we have a pigment that is so active chemically that it enters into a chemical combination with the linseed oil, with the result that viscosity is increased and the flowing power of the oil is very much reduced. We are willing to admit that if barytes is mixed alone with linseed oil and applied to a painted surface, the brush marks will flow out; so also will the barytes, leaving streaks and streams where it has flowed; this also is true of whiting, sulphate of lime, &c.

Not only does White Lead mix with Linseed Oil, so that the Brush marks flow out and a good smooth surface be obtained, but it also gives a white Paint of the

GREATEST POSSIBLE COVERING POWER.

A great deal has been written on the relative hiding or covering power of various white pigments, but a great deal of confusion has entered into most of these discussions. If we are to compare two paints for a hiding or covering power, let us bear in mind that these two Paints may work entirely different as to the amounts that can be put on a certain definite surface in the hands of an intelligent painter. Thus, on very careful tests made by a very competent man, I have found that one Paint, applied to a surface of about 200 sq. ft., spread at the rate of 1000 sq. ft. to the gallon; whereas another Paint, applied by the same man, spread at the rate of 600 sq. ft. to the gallon. From this it will be seen that the Paint which spread only 600 sq. ft. to the gallon would give a Paint film very nearly twice as thick as that which spread at 1000 sq. ft. to the gallon, and consequently should have, other things being equal, a covering or hiding power nearly twice as great.

It is of the utmost importance, therefore, in comparing the covering power or hiding power of Paints that they be spread at the same rate, or if not at the same rate, then it should be clearly explained what the rates were at which they were spread. Now we have no hesitancy in saying that white lead is the only commercially successful white pigment, which when mixed with a consistency proper for painting, or to a consistency where the Brush marks flow out has a high and satisfactory covering or hiding power. Thus, zinc oxide, when mixed with linseed oil, so as to have a covering power equal to white lead and spread at the same rate cannot be applied to a surface so as to produce a satisfactory coating. Sublimed lead has the same general defect as zinc oxide, though to a less degree.

HOUSE PAINTING.

Let us consider another peculiar quality which white lead possesses. It is impossible to prepare a Paint suitable for every condition of outside exposure, such as obtains in house painting. Every kind of wood and every kind of exposure requires special study and treatment. Some parts of a house are exposed to the direct rays of the sun, and others are protected by the shade of trees. In order to get good results, the Paint applied to that side of the house which is exposed to the sun should contain more oil than that side of the house protected by trees. The reason for this is that the side of the house exposed to the sun is more absorbent than the side protected by the shade of the trees. Furthermore, it is more desirable where the side of the house is protected by the shade of the trees to have a harder film, so that the pollen and organic matter from the trees will not settle into the Paint and discolor it.

Now, white lead can be mixed with linseed oil according to different formulas, with comparatively little effect upon the ease with which it can be spread over and applied to a surface to be painted. White lead paste can be mixed with linseed oil on the formula of 4 gal. of linseed oil to the 100 lb., or on the formula of 5 gal. of linseed oil to the 100 lb., as the condition of the surface may require, and the painter will find comparatively little difference in the ease with which these two Paints can be applied. This remarkable quality is not possessed by any other pigment that we know of, and explains the wide range within which the painter can handle a Paint, the principal ingredient of which is white lead.

BRUSHING.

It is generally admitted that the best results are obtained by the painter when he uses a good old-fashioned round Brush, because in using that Brush he must have a good strong arm and wrist, capable of pressing the Paint into every part of the surface painted. He works the Brush back and forth, not too much, but just enough to get good results. With such a Brush in his hand the well equipped painter can apply a White Lead Paint under the greatest variety of conditions.

With a flat Brush he cannot do as good work; and we are free to admit that if a Paint is to be applied as a wash and not to be well brushed in no regard being paid to durability, practically any old thing will form a suitable pigment. The good painter knows the working qualities of white lead. He knows that a small amount of white lead paint, even if mixed comparatively stiff can be brushed out by him into every crevice of the surface with the old round Brush, and that he will obtain a nice smooth, well finished coating; and among White Paints this can be done with white lead only, or a white or nearly White Paint, in which the principal pigment constituent is white lead.

DURABILITY AND PROTECTION.

Now we come to perhaps the most important quality to be considered in connection with the Paint problem—that is, the durability of the Paint after being applied and the protection which it affords to the surface painted. In considering this question, let us not think that there is anything which is not perishable; even gold, silver, platinum and precious stones slowly wear away, and are, to a greater or less degree, affected by that almost universal solvent—water. Paints decay in the same way that iron rusts and wood rots, and when we consider that most Paints supplied to the outside of houses are hardly more than one two-hundredths inch in thickness, it is really astonishing that they have as great a protective power as we find them to possess. Now, this question of the durability of Paint is a very large one, and one that can be gone into here only along general lines.

If we were to ask for an ideal Paint, we would not ask for one that would not perish, for that would be to ask for an impossibility; but we would ask for a Paint that would wear away gradually, and, after a given time, permit the repainting of the surface without burning the old Paint off or removing it by chemical means and giving a painted surface in all respects equal to the original work when first painting was done. Not merely must the Paint films on the new work adhere closely to the surface painted, but when repainting is done there must be no danger that the future coats of Paint will peel or flake and leave a roughened and uneven surface—only to be remedied by the burning off of the entire Paint.

PAINT DECAY.

It makes comparatively little difference as to the particular way in which Paint decays; whether it be by the gradual disintegration of the oil, leaving the pigment on the surface in a more or less powdery condition, or where the pigment enters into combination with the oil, producing more or less soluble compounds which dissolve as soaps in the rain and moisture to which they are subjected. The important question is, Will the Paint adhere to the surface painted during the lifetime of the building? Now, while as a matter of fact Paint decay takes place in several ways, in substance all real decay is simply due to the disintegration and destruction of the oil, which is the binding material.

With some Paints, when this decay takes place the pigment leaves the surface also and all the surface becomes practically denuded. With other Paints, when the oil goes the pigment stays behind. When this latter condition arises we have what is called "chalking." This is the way in which White Lead Paint decays. The binding material becomes destroyed, but the pigment remains, and to many the fact that white lead chalks has been considered an evil, whereas if the pigment washed away with the oil the decay of the Paint would not be so apparent. It would appear, however, that this failure of white lead to wash off with the decay of the vehicle should be considered an advantage rather than a disadvantage, for it must act to at least a small degree to protect the Paint underneath.

SCALING.

But there is another way in which Paint goes, and that is by scaling, and scaling is the worst form of Paint decay, if it can be properly called decay when the Paint bodily leaves the surface to which it is applied. Scaling is occasioned by the Paint film becoming disengaged from the surface, either because moisture has worked through under the coat of Paint or because on repainting the oil used has weakened the bond between the Oil Paint and the surface painted. With white lead scaling, properly speaking, never occurs; but even with white lead a kind of peeling sometimes makes its appearance when much moisture has worked through the boards from the back. With Paints containing much zinc the elasticity of the film is very low, it being hard and becoming harder and more brittle the older it is. A brittle coat cannot conform to the contractions and expansions of a surface as readily as an elastic coat can, and for this reason any loosening of the bond between the Paint film and the surface to which it is applied is dangerous in proportion to the brittleness of the film.

We have no hesitancy in affirming that a pure White Lead Paint or Paint composed principally of white lead, with other pigments added only for tinting purposes, will

wear uniformly and evenly, so as to present the very best foundation for repainting.

From many hundreds of experiments which I have made it has been demonstrated that

A HARD PRIMING COAT GIVES THE BEST RESULTS,

and that when a soft priming coat is used the body and finishing coats, usually being relatively harder, will on drying check or alligator. It is for this reason that ochre primings should be condemned and that some turpentine is frequently recommended even in lead primings. It is generally admitted, we believed, that at least for priming purposes White Lead Paint gives the best results, and there is not one that seriously advocates that zinc alone should be used in priming coats where its deficiency in body or covering power would not be a disadvantage; all this, apparently, from the binding or uniting adhering quality which white lead priming Paint possesses to such a remarkable degree and which zinc lacks. If, then, white lead produces such an excellent priming coat, it would readily be seen that the same advantage obtains when old White Lead Paint is repainted, for the old White Lead Paint becomes practically the priming for the repainting.

CHEMICAL UNION.

A great deal has been written as to the chemical action between pigments and the oil or vehicle with which they are mixed, and many writers have attacked white lead on the assumed ground that it is an active pigment combining chemically with the oil with which it is mixed. Undoubtedly there are many authorities for this opinion, but unfortunately an examination of these authorities fails to disclose any positive evidence that there is a chemical union between the white lead and the linseed oil. My own experience would indicate to my mind that white lead is, relatively speaking, a very inactive pigment, and that there is practically no chemical union between it and the linseed oil with which it is mixed and applied as Paint.

Dr. Toch's Address.

Dr. Maximillian Toch of Toch Bros, New York City, representing the Paint Grinders' Association of the United States, was the first speaker of the afternoon. The doctor really delivered an illustrated address, using a large number of slides and throwing a large number of views of New York City buildings, bridges, steamers and other specimens of steel and iron structural work. He showed the effects of corrosion of steel and iron, and spoke of the effects of salt water and atmospheric conditions. Those present very much enjoyed his lecture. Dr. Toch's address was in part as follows:

Mixed Paint as an article of commerce is distinctively American, and was first placed on sale about 40 years ago, and owes its success to the demand created by the pioneers. There are a variety of materials which enter into the manufacture of Mixed Paints, the best known being white lead, for the reason that for nearly 2000 years it stood alone, and zinc oxide, sublimed lead, zinc lead and lithopone have all appeared within 50 years, and they have come to stay.

Some 40 years ago Dr. Breinig found, like all other observers, that white lead at the sea shore did not wear well, but chalked and flaked, and on mixing lead with ground quartz he obtained a Paint that lasted several years longer, and when repainting became necessary the surface presented was better adapted for the purpose.

NEW MATERIALS ADDED.

Then this marks the advent of materials added to lead and zinc to give them life and quality, and these materials we call fillers or inert extenders.

A large number of the natural pigments contain these fillers or inert extenders, such as ochre, sienna, bone black, iron oxides, umbers, mineral blacks, &c. Many of the chemical pigments contain them also, such as lithopone, venetian red, olive green, &c.

THE NORTH DAKOTA LAW.

The law of North Dakota as it stands to-day says that all Paints must be made of nothing else than white lead, zinc, linseed oil, turpentine, Japan drier and pure colors. If any other ingredient is used, the Paint must be labeled. It must be understood that I have no objection to white lead, for it possesses qualities which have made it very valuable to the painter, and these are its enormous hiding power or body and the ease with which it is applied. Nor have I anything against zinc, for I have always been a staunch advocate for its use, and I unhesitatingly make the statement that no Paint maker in the world can keep his factory going without it.

Zinc has a great value, yet 50 years ago it had few friends and fewer users. Linseed oil and turpentine are staples in the trade, and of linseed oil it can truly be said that no substitute has been found for it in general house painting; yet I will show you that there are Paints which are made in industrial quantities into which none of these materials enter nor into which zinc or lead or oil would be anything but a detriment.

I have not come here to speak against your law, although I am totally against it in the letter, but heartily with it in spirit. Your Legislators have not proved that the so-called statutory pigments, lead and zinc, make the best Paints, and allowing only such Paints to be unlabeled as to composition they have cast an onus on other good Paints which is unjust and uncalled for. I believe that this law was only intended for white and light shades of Paints, for no man or body of men could be so shortsighted as to expect that a black or a red or a brown or a green Paint could be made of lead or zinc with the necessary tinting material.

LABEL ALL PAINTS.

If you want a law to protect your people against bad Paints, then label them all and give no preference to any, for there is no chemist nor any Paint manufacturer who can say a Paint of given composition is the best. I have had more experience in making Paint than all the experts in North Dakota, and I realize that this may be very little, yet when my firm obtains an order for Bridge Paint for South America, I make it totally different than I make Bridge Paint for Illinois.

PAINT ON SKYSCRAPERS.

I show you a number of views of the city of New York, with its high buildings and skyscrapers, all of which depend to a greater or lesser degree upon Paint for their permanence. The steel skeletons of all these buildings must be protected against corrosion, and in some cases it has been found that the wrong Paint, no matter how good its quality may have been, judged from your standpoint of purity, has created quite a considerable damage and oxidation has been the result. In my entire experience as a specialist on the subject of the manufacture of protective coatings for structural steel, I know of no instance where your statutory Paints were used or could have been used.

I show you some upright columns of one of our skyscrapers which had been covered five years after they were erected, and you can see for yourselves the marked corrosion which has started.

Here is a picture of the foundation beams of an enormous power house in which electricity is generated for electrifying a railroad and the foundation beams which we call grillage beams are coated with a Paint to prevent electrolytic, corrosion and to prevent corrosion from chemical causes, and yet in a structure of this kind no Paint was used which had any semblance to any Paint such as your laws describe, for some of the Paints used in this building and used on the foundations contain neither lead nor zinc, nor linseed oil nor turpentine, but are composed entirely of hydrocarbon compounds which act as insulators and rust preventors.

A MANUFACTURING STATE.

I know that your answer will be that you are an agricultural country and do not need Paints of this kind, but that answer does you an injustice. The time will come, and it is not very far off either, when you will be a manufacturing State the same as other States, which in previous years were farming countries. The tide of progress and the advance of civilization shows in your State as much if not more than in any other.

CHARGES DISCRIMINATION.

I have repeated that I have no objection to your law, but the mere fact that you have stated that lead and zinc Paints shall have a halo around them, for they are holy, and all other paints must be identified by a black mark against them, is sufficient warrant for you to revoke any such legislation if it be in your power, for you are discriminating ignorantly against that which you know not.

ANTIFOULING PAINTS.

The bottoms of ships are coated with Paints known as antifouling Paints composed principally of copper, mercury and tarry or bituminous compounds to hold these materials in place and to prevent the water from dissolving them away. The man in your State who is ignorant would infer that all Paints to be good should be made of white lead, zinc oxide, linseed oil and turpentine, and yet a mixture of this kind placed on the bottom of ocean going ships would retard their speed so much by reason of the fact that it would make such an excellent feeding ground for barnacles that the damage would be incalculable.

You will see from the illustrations now before you a large power house with four steel stacks. The only material sanctioned by your statute which has been used

for repainting these stacks—and three coats were applied not very long ago—is linseed oil. The pigments contained in this stack Paint which must stand the corrosive influences of the air of the Atlantic coast, are neither lead nor zinc, but are as free as possible from chemical pigments. Inert pigments were used and we find in them no chemical action whatever.

PAINT PROGRESS.

I mention this as a matter of progress to show how within as late a period as four years men who know their business thoroughly can see that Paint progress means the abandonment of ancient ideas.

Your excuse might be that your law on this subject fits the conditions as they exist now, but I would call your attention to the remarkable fact that when the Constitution of the United States was adopted it was adopted not to meet the petty wants of the 13 original States, but had in view the future progress of the country, and thus a constitution was written which would hold forever good no matter how large this country would grow.

If you will read the Constitution of the United States you will find that we are still living under its wise principles, and that the original legislators wrote with a judgment and foresight which was almost inspired.

ELECTROLYTIC CORROSION.

I show you a very remarkable series of pictures of a bridge six years old, which was electrified after its erection for the purpose of trolley transportation, and at the end of six years a hand rail of the bridge had been slowly eaten away by that process which we now recognize as electrolytic corrosion. I do not say that any Paint would have prevented this, although there is no question about it that the Metallic Paints had hastened it.

To show you how much farther we are advanced than you a central railroad corporation in New York ordered a light colored Paint last year composed of about equal parts of sublimed white lead, corroded white lead and zinc oxide, as a priming coat; they ordered thousands of gallons of a Red Paint, composed of 70 per cent. iron oxide, 20 per cent. silica and 10 per cent. whiting. If any of your legislators thinks that this railroad company is foolish or is buying a poor Paint let him come to me and I will give him chemical reasons as to why they are saving money and buying Paint which is far superior to the statutory Paint of North Dakota.

Twenty-five years ago any chemist would have been tarred and feathered had he advocated the use of 70 per cent. barytes in a Mixed Paint for the protection of steel, and yet in the new custom house of San Francisco, a place above all where permanency is required, the steel work is being painted with a mixture of 30 per cent. black, 10 per cent. zinc and 70 per cent. barytes, and if your Legislature knows better, let it hie itself and tell them that they are wrong, and to Washington together with its experts that your statutory Paints are better. I could cite you endless cases, but I do not wish to outwear my welcome.

I have, of course, no sympathy with worthless Paints or concoctions which masquerade under the name of Paints. The mail order house Paints are not worthy of the name, and yet they can defy you by shipping their wares into this State in unbroken packages, and the honest maker has no recourse.

Prof. Ladd's Address.

Prof. E. F. Ladd, State Dairy and Food Commissioner of North Dakota, was then introduced. Professor Ladd prefaced his address by a distinct announcement of the fact that he still stood for the North Dakota law; that he had not made any changes or expressed any changes in his views in this regard. He also emphatically disproved any assertion that the drawer of the North Dakota Paint measure was in any way influenced in the interest of any manufacturer, but worked solely in the interests of the people of North Dakota. Professor Ladd's address will be given in a later issue.

THE TOWNLEY METAL & HARDWARE COMPANY, Kansas City, Mo., has been forced by the growth of its business to increase its already large warehouse capacity, and has begun the erection of a five-story and basement addition thereto, 60 x 140 ft., which will be of concrete construction throughout. The first floor will be arranged with a cut-under loading dock, 60 ft. long, having eight doors for outgoing freight. The second floor will be equipped with chutes leading to the floor below for the expeditious handling of packages, and the entire building adapted and fitted with modern appliances for the convenient storage and handling of goods.

HARDWARE ASSOCIATION MATTERS IN BRITISH COLUMBIA.

LAST month the wholesale and retail Hardwaremen of British Columbia held conventions in Victoria, both associations meeting on the same days. The wholesalers, however, confined their meetings largely to the first day and the retailers to the second, all coming together on the evening of the second day at a banquet tendered by the jobbers to their customers.

Wholesale Hardware Meeting.

President W. G. Mackenzie of Wood, Vallance & Leggatt, Vancouver, presided at the meetings of the British Columbia Wholesale Hardware Association, and in his annual address spoke of the prosperous condition of trade, the good feeling existing, and the good work of the association. The report of Secretary-Treasurer Burns showed the finances of the association to be in good shape.

Practically every jobbing house in the Province was

C. P. W. SCHWENGERS.

represented, and marked interest was shown in the proceedings. Steps were taken to extend the usefulness of the association. All the proceedings were marked by harmony and no contests developed in the annual election of officers, the following being chosen unanimously: President, C. P. W. Schwengers, E. G. Prior & Co., Limited, Victoria; vice-president, John Boyd, Boyd, Burns & Co., Vancouver; secretary-treasurer, John Burns, Vancouver. Executive Committee: W. G. MacKenzie, J. Elliott and A. Cunningham.

Retail Hardware Meeting.

The three coast cities—Vancouver, Victoria and New Westminster—were all well represented at the meeting of the British Columbia Retail Hardware Association, the members spending a profitable day in discussing matters of interest to the trade. Relations with the jobbers were reported to be excellent, and by working together it was felt that both branches of the trade were assured better margins of profit. It was decided that the next annual meeting of the association would be held at New Westminster, where the wholesalers will also meet. The election of officers resulted as follows: L. B. Lusby, president; C. Snell, vice-president; John Burns, secretary-treasurer. Executive Committee: Messrs. Kirk, Ogilvie and Stearman.

The Banquet.

The banquet which the wholesalers tendered to the Retail Hardware Association was the first function of its kind, and President Schwengers of the Wholesale Association, who presided, drew attention to the cordial relations existing between the two organizations. He said it would be the aim of the wholesalers to maintain this

happy condition. President Lusby of the Retail Association, Past President MacKenzie of the Wholesale Association, and John Burns, secretary-treasurer of both organizations, all spoke along similar lines. The function was a great success and brought the two conventions to a fitting close.

During the coming year the Retail Hardware Association will probably affiliate with the Ontario and Western Canada associations, which bodies have already taken steps toward forming a National Retail Hardware Association. This matter will be further discussed at the convention of the Ontario Retail Hardware Association which will be held at Toronto on March 28 and 29.

PRICE-LISTS, CIRCULARS, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

THE PITTSBURGH AUTOMATIC VISE & TOOL COMPANY, Pittsburgh, Pa.: A series of blotting pads in the interest of the various kinds of Double Swivel Vises manufactured by the company.

THE ROBERTSON MFG. COMPANY, 1453 Niagara street, Buffalo, N. Y.: Catalogue illustrating Rapid Metal Cut Saws, hand and Horse Power Grinding Machines, &c.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn.: 1907 price-list of Loaded Shells.

FORT PITT SPRING & MFG. COMPANY, Pittsburgh, Pa.: Illustrated catalogue of Steel Springs for locomotives, cars, vehicles, gun carriages, &c.

CLARK-HORROCKS COMPANY, Utica, N. Y.: Illustrated catalogue of Fishing Tackle, including Rods, Reels, Lines, Flies, Artificial Bait, &c.

THE STEWART IRON WORKS COMPANY, Cincinnati, Ohio: Supplement to Catalogue No. 35 B, showing latest designs of Plain and Ornamental Iron Fencing, Ornamental Gates, Cemetery Arches, Iron Reservoir Flower Vases, Lawn and Park Settees, Drinking Fountains, &c. The supplement is 10½ x 13½ in., and was especially gotten up for the Hardware merchant.

COLUMBIA STEEL COMPANY, formerly Columbia Engineering Works, Portland, Ore.: Bulletin H-20 referring to Skookum Cast Steel Blocks and Loggers' Tools.

MARSHALLTOWN TROWEL COMPANY, Marshalltown, Iowa: Illustrated catalogue and price-list of Trowels and Plasterers' and Masons' Tools.

D. H. POTTS, Lancaster, Pa.: Illustrated catalogue of Forges, Fan Blowers, Drills, Tire Benders and Upsetters, Vises, Screw Plates, &c.

SAMSON CORDAGE WORKS, Boston, Mass.: Price-list of Sash Cord, Clothes Lines, Solid Braided Rope, Signal Cords, Lariats, &c.

PREMIER SPECIALTY COMPANY, Chicago: Illustrated catalogue of Single, Triple and Quadruple Adjustable Mirrors.

H. L. BENNETT & Co., Westerville, Ohio: Circulars referring to Bennett Corn Harvesters, Stump Pullers, Farm Wagons, &c.

PRITCHARD-STRONG COMPANY, Rochester, N. Y.: Handsome catalogue, illustrated in colors, referring to Prisco Lanterns, Tubular Lamps, Street Lamps, &c.

AT a recent meeting of the directors of the Freeport Hardware Company, Freeport, Ill., the following officers were elected: D. B. Schulte, president; A. F. Schulte, vice-president; A. Billerbeck, secretary and treasurer.

ON April 1 the Indiana Hardware Company, Limited, will take over all the right, title and interest of the firm of A. T. Taylor & Son, Tinning, Plumbing and Roofing, Indiana, Pa., and will move into the large Sutton Building, recently purchased by A. T. Taylor. This building has a floor space of 19,000 sq. ft. and will give the company ample room for its increasing business. The officers of the company will be as follows: S. A. Rinn, president; H. J. Hinterleitner, vice-president; W. W. Taylor, treasurer; L. M. Heyl, secretary; A. T. Taylor, manager Tinning and Plumbing Department; L. F. Sutter, manager Hardware Department.

REQUESTS FOR CATALOGUES, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM BIGSBY & WADE, 217 East Twenty-third street, New York, who have lately commenced the Hardware and General Supply business.

FROM CUSACK & ALLEN COMPANY, 1004 Arch street, Philadelphia, Pa., handling Builders' and General Hardware, Cutlery, Building Paper, Paints, Oils, Brushes, Contractors' Supplies, &c.

FROM J. E. CRAIG & SON, Blockstock, S. C., Hardware, groceries, &c., who desire catalogues and quotations from manufacturers of Implements, Buggies and Wagons.

FROM DUFFY BROS. HARDWARE COMPANY, which has opened an attractive store at 78 Weybosset street, Providence, R. I. Besides Hardware and Cutlery it will carry a full line of Boat Hardware.

FROM J. A. SELTZER, formerly with F. W. Sanner, Tremont, Pa., who has purchased the Hardware, tinning and plumbing business of T. I. Honeyman, Somerville, N. J.

FROM C. M. FELT, Huntington, L. I., N. Y., who handles Hardware and brass goods and builders' and carriage supplies.

FROM JOHNSON HARDWARE COMPANY, Marshallville, Ohio, which is opening a branch store there in connection with its headquarters at Barberton.

FROM E. S. BURNS, Ogdensburg, N. Y., who has recently succeeded Robert Bowman in the Shelf and Heavy Hardware, Stove, Paint, Plumbing and Heating business.

FROM L. H. TOUCEY COMPANY, Waterbury, Conn., which is now fitting up its store for the accommodation of a line of General Hardware, which will be carried in connection with its former Plumbing and Heating business.

COES WRENCH COMPANY.

THE COES WRENCH COMPANY, Worcester, Mass., manufacturer of Wrenches and Machine Knives, is to make important additions to its works this spring, which will increase the capacity of the Knife department 150 per cent., and at the same time add to the output of the Wrench department. The growth of the business has been very rapid during the past year. The Knife department has had to refuse orders which would have kept the works running for several months could the business have been handled. The increase in the Wrench business in 1906 was nearly 25 per cent., and the first two months of 1907 show that the year will see as substantial a growth. Consequently it became imperative that additional manufacturing capacity be provided. While the additions are for the Knife department, the extending of the hardening and grinding departments will also serve the purposes of the Wrench business, for which considerable work will be done.

A one-story wooden building, 54 x 62 ft., will be erected for the hardening department and the rolling mill proper. A one-story brick building, 25 x 110 ft., with

copper saw tooth roof, will be occupied by grinding, machine and straightening departments. This building will be connected with the old building by a one-story passage, 25 x 35 ft., which will include the space for an elevator of 1 ton capacity, a lift being necessary because the floors of the two buildings are on different levels. In the Knife department engine room will be installed a 135-hp. Westinghouse generator, which will supply power for the electric drive of all machinery in the new buildings. There will be a new three-story office building, 30 x 30 ft., fireproof, of cement and steel construction, which will contain main and private offices, drafting room and a vault on each floor for the storage of patterns, books, papers, &c. The contract calls for the completion of the building by July 1. The buildings will be from designs of Frank L. Coes, president and treasurer of the company. This will be the seventh time the Knife works have been added to in 12 years, not taking into account rebuilding after a fire, which in itself constituted an increase in manufacturing capacity. No new machinery will be purchased, the entire equipment being of a special nature and built by the company, the only exceptions being generator and motors, which have already been ordered.

Some idea of the increase in product of the Wrench factory may be had from the fact that in 1906 the company manufactured 60,000 dozens of Wrenches, exclusive of the Key Model Wrench, which, reckoned by weight, totaled 140,000 lb. of Wrenches a month.

MISCELLANEOUS NOTES.

Eller Mfg. Company.

Eller Mfg. Company, Canton, Ohio, maker of metal ceilings, cornices, skylights, window frames, &c., is offering a number of new designs in metal ceilings styled Italian renaissance. Circulars giving half-tone reproductions of these designs, including cornice, border and filler and plate, have been prepared and will be mailed to the trade on application.

Rush Noiseless Saw Clamp.

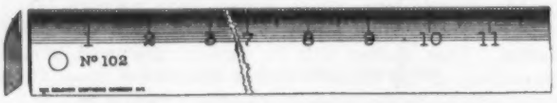
Divine Bros. Company, Utica, N. Y., whose representative is the Smith & Hemenway Company, 108-110 Duane street, New York, has just put on the market the Rush noiseless saw clamp, No. 780, as here shown. Its entire length is 15 in., thus requiring but one change of

Rush Noiseless Saw Clamp.

position to file an ordinary hand saw its entire length. It is adjustable, weighs but 1 lb., and can be instantly attached to a ⅞ in. board, there being but two wood parts and two wire parts; the wood being ebonized and the wire nickeled. The clamp is quickly snapped into place and as easily released by means of an eccentric movement. The wood is said to have a chemical treatment that precludes warping out of shape from dampness or moisture. The clamps are packed one in a case and six in a carton.

Desk Rule.

The Lufkin Rule Company, Saginaw, Mich., and 280 Broadway, New York, is making the No. 102 rounded bevel desk rule here shown at the factory of Belcher Bros. Company, Irvington, N. J., recently purchased outright. It has brass overlay edges and is made in 12, 15, 18, 21 and 24 in. lengths. The small sectional end view represents the shape of the rule. The same style of rule, No. 101, same lengths, is made in maple wood, and a No. 103, same lengths, is made with brass overlay and inlaid edges in maple wood, while a fourth group, No. 104, is



Rounded Bevel Desk Rule, with Brass Overlay Edge.

exactly the same as the No. 103, except that the material is boxwood. The rule is graduated in sixteenths and finely finished.

Motor Boat Bilge Pump.

Bevin Bros. Mfg. Company, East Hampton, Conn., is putting on the market the motor boat bilge pump illustrated in the accompanying cuts. Fig. 1 shows the pump separately, while Fig. 2 indicates its method of opera-

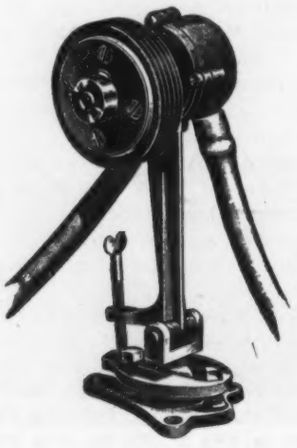


Fig. 1.—Motor Boat Bilge Pump.

tion by means of a friction pulley thrown in contact with the flywheel of the engine. The manufacturer states that the pump will run on either side of the flywheel and is adjustable to any floor. It is designed to discharge through the wall of the boat well above the water line or over the side, and has a capacity of 5 gal. per minute.

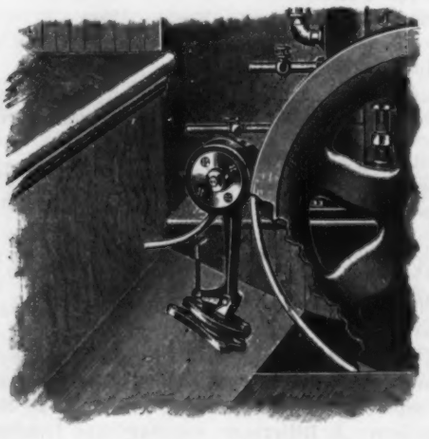


Fig. 2.—Bilge Pump Attached to Flywheel.

Two styles are offered: No. 1, made entirely of brass, and No. 2, made of brass and iron. With each pump is furnished 18 in. of suction pipe with screen and 18 in. of discharge pipe. Additional hose can be had at moderate cost.

Bolted Wheelbarrow.

The wheelbarrow shown in the accompanying illustration is of new design, and patents have been applied for to protect the features of improvement claimed by the Western Wheelbarrow & Mfg. Company, Kansas City, Kan., which manufactures this type in connection with a large line of similar goods. Facility in assembling is the particular feature of interest to which attention is

Bolted Wheelbarrow.

directed in the barrow's construction, it being joined throughout with bolts. It is claimed that the barrow can be set up ready for use in eight minutes, which shows a considerable saving in time over that required to assemble those of usual type. The tray being wedged to the frame, when loaded has a tendency to crowd forward and when loaded has a tendency to crowd forward and tighten itself, thus preventing the usual difficulty experienced in the gradual loosening of the tray with use. It will be observed that there are only two cleats used in the tray bottom, and that two bolts suffice to hold it in place.

Victor Pressed Steel Corners.

Diamond Hardware Mfg. Company, Pittsburgh, Pa., is making the pressed steel corners shown herewith. As their name indicates, they are corner pieces of thin pressed steel applied with screws to the wood of screen

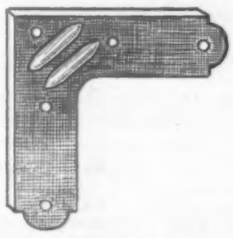


Fig. 1.—Victor Pressed Steel Corner.

or screen door frames to make them square and rigid. Fig. 1 shows the corner separately, and Fig. 2 the accompanying hinge and hinge pin furnished for window screens. Extra brace plates are made for doors to fit over the cross pieces and hold them solid. The manufacturer states that the corners make it easy to secure a perfect fit, doing away with the necessity of mitering

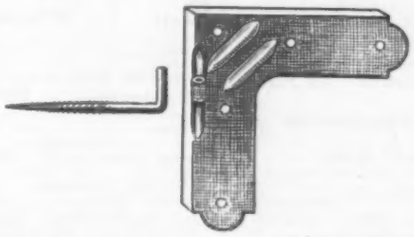


Fig. 2.—Window Corner with Hinge Attached.

and enable any intelligent person to make a satisfactory screen. Sets for window screens include four corner pieces with screws and hinge pins; door sets include eight pieces with screws and brace plates as mentioned above. Hard or soft wood strips are also furnished, if desired, according to the company's price-list.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal	
Linseed, City, raw	.42	@43
City, Boiled	.43	@44
State and Western, raw	.40	@41
Raw Calcutta, in bbls		@70
Lard, Extra Prime, Winter	.78	@79
Extra No. 1	.51	@52
No. 1	.45	@46
Cotton-seed, Crude, f.o.b. mills	.39½	@40
Summer Yellow, Prime	.47½	@48
Summer White		@51
Yellow Winter		@51
Sperm, Crude	.59	@60
Natural Winter	.72	@73
Bleached Winter	.75	@76
Bleached Winter, Extra		@..
Tallow, Prime	.60	@61
Whale, Crude	.35	@36
Natural Winter	.46	@47
Bleached Winter	.48	@49
Extra Bleached Winter	.50	@51
Menhaden, Brown, Strained	.32	@33
Light Strained	.32	@33
Northern		@..
Southern		@..
Cocoanut, Ceylon ℔ lb	9⅞	@10
Cochin ℔ lb		@10¾
Cod, Domestic, Prime	.37	@41
Newfoundland	.40	@45
Red, Elaine	.47	@50
Saponified ℔ lb	6½	@ 7
Olive, Italian, bbls., Yellow	.80	@85
Neatsfoot, Prime	.56	@57
Palm, Logos ℔ lb	..	@ 7½

Mineral Oils—

	℔ gal.	
Black, 29 gravity, 25@30 cold test	11½	@12
29 gravity, 15 cold test	12½	@13½
Summer	11½	@12
Cylinder, light filtered	.19	@20
Dark, filtered	16½	@17½
Paraffine, 903-907 gravity	.14	@14½
903 gravity	.13	@13½
883 gravity	10¾	@11¼
Red	.13	@14½

Miscellaneous—

Barytes:		
White, Foreign ℔ ton	$18.50	@20.50
Amer. floated ℔ ton	19.00	@20.00
Off color ℔ ton	13.00	@16.50
Chalk, in bulk ℔ ton	3.00	@ 3.25
In bbls ℔ 100 lb	..	@ .35
China Clay, Imported ℔ ton	11.00	@17.50
Cobalt, Oxide ℔ 100 lb	2.50	@ 2.60
Whiting, Commercial ℔ 100 lb	.43	@ .52
Gilders ℔ 100 lb	.55	@ .65
Ex. Gilders ℔ 100 lb	.60	@ .65

Putty, Commercial—℔ 100 lb

In bladders	$1.70	@1.85
In bbls. or tubs	1.20	@1.45
In 1 lb to 5 lb cans	2.65	@2.95
In 12½ to 50 lb cans	1.50	@1.90

Spirits Turpentine—℔ gal.

In Oil bbls	77½	@78
In machine bbls	78	@78½

Glue—

	℔ lb	
Cabinet	.12	@15
Common Bone	7½	@ 9
Extra White	.18	@24
Foot Stock, White	.12	@14
Foot Stock, Brown	.9	@11
German Hide	.12	@18
French	.10	@40
Irish	.13	@16
Low Grade	.10	@12
Medium White	.14	@17

Gum Shellac—

	℔ lb	
Bleached Commercial	.46	@48
Bones, Dried	.58	@..
Button	.40	@50
Diamond I	.59	@60
Fine Orange	.56	@57
A. C. Garnet	.44	@46
Kala Button	.37	@38
D. C	.62	@..
Octagon B		@54
T. N	.47	@48
V. S. O	.59	@60

Colors in Oil—

	℔ lb	
Black, Lampblack	.12	@14
Blue, Chinese	.36	@46
Blue, Prussian	.32	@36
Blue, Ultramarine	.13	@16
Brown, Vandyke	.11	@14
Green, Chrome	.12	@16
Green, Paris		@24
Sienna, Raw	.12	@15
Sienna, Burnt	.12	@15
Umber, Raw	.11	@14
Umber, Burnt	.11	@14

White Lead, Zinc, &c.—

	℔ lb	
Lead, English white, in Oil	9⅝	@10
Lead, American White:		
Lots of 500 lb or over, in Oil		@ 7½
Lots less than 500 lb, in Oil		@ 8
Lead, White, in oil, 25 lb tin pails, add to keg price		@ ⅛
Lead, White, in oil, 12½ lb tin pails, add to keg price		@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price		@ 1½
Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net. ℔ lb		
Zinc, American, dry	5⅝	@ 5½
Zinc, French:		
Antwerp, Red Seal, dry	8¾	
Antwerp, Green Seal, dry	10¾	
Paris, Red Seal, dry	9¼	
Paris, Green Seal, dry	11	
Zinc, V. M. French, in Poppy Oil:		
Green Seal:		
Lots of 1 ton and over	13¼	@13¾
Lots of less than 1 ton	13¾	@13¾
Zinc, V. M. French, in Poppy Oil:		
Red Seal:		
Lots of 1 ton and over	11¾	@12¾
Lots of less than 1 ton	12¼	@12¾

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	℔ lb	
Black, Carbon	9½	@10
Black Drop, American	4	@ 6
Black Drop, English	5	@15
Black, Ivory	16	@20
Lamp, Com	4	@ 6
Blue, Celestial	4	@ 6
Blue, Chinese	30	@33
Blue, Prussian	28	@32
Blue, Ultramarine	4½	@15
Brown, Spanish	½	@ 1
Carmine, No. 40	$3.10	@3.25
Green, Chrome, ordinary	3½	@ 7
Green, Chrome, pure	.17	@25
Lead, Red, bbls., ½ bbls., kegs		@ 7¾
Litharge, bbls., ½ bbls., kegs		@ 7¾
Ocher, American ℔ ton	$8.50	@16.00
American Golden	2½	@ 3½
French	1½	@ 2
Foreign Golden	3	@ 4
Orange Mineral, English	.10	@12
French	10¾	@12
German	8½	@10
American	8½	@ 8¾
Red, Indian, English	4½	@ 6
American	3	@ 3½
Red, Turkey, English	4	@10
Red, Tuscan, English	7	@10
Red, Venetian, Amer. ℔ 100 lb	$0.50	@1.25
English ℔ 100 lb	$1.15	@1.75
Sienna, Italian, Burnt and Powdered	3	@ 9½
Italian, Raw, Powdered	3	@ 7
American, Raw	1½	@ 2
American Burnt and Pow'd	1½	@ 2
Talc, French ℔ ton	$17.00	@25.00
American ℔ ton	15.00	@25.00
Terra Alba, French ℔ 100 lb	.90	@ 1.00
English ℔ 100 lb	.80	@ 1.00
American ℔ 100 lb, No. 1	.75	@ .80
American ℔ 100 lb, No. 2	.60	@ .65
Umber, Turkey, Bnt. & Pow.	2½	@ 3½
Turkey, Raw and Powdered	2½	@ 3½
Burnt, American	1½	@ 2
Raw, American	1½	@ 2
Yellow Chrome	.13	@15
Vermillion, American Lead	.10	@25
Quicksilver, bulk	.65	@..
Quicksilver, bags		@65
English, Imported	.65	@70
Chinese	$0.90	@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1906, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ℔ doz. $3.00.....33⅓%
North's 15%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition— See *Caps, Cartridges, Shells, &c.*

Anti-Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs .....$2.00@$3.00

Anvils—American—
Eagle Anvils.....@8½¢ ℔
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....℔ 9½@9¾¢

Imported—
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....15&10%

Apple Parers— See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co.....33⅓%

Augers and Bits—
Com. Double Spur..70&5@70&10%
Jennings' Patn., reg. finish....60&5@60&10%
Black Lip or Blued...65@65&5%
Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40&10%
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....40%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....20%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26.....50&10%
Clark's Pattern, No. 1, ℔ doz. $28; No. 2, $18.....60&10&10%
Ford's, Clark's Pattern.....60%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10&10%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames .....25&10%
Universal 20%
Wood's Universal.....25%

Ship Augers and Bits—
Ship Augers.....40&10%
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....33⅓&7½%
Snell's 40%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered..gro.63@65¢
Unhandled, Patent..gro.65@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights: Per doz.
First Quality.....$4.75@5.00
Second Quality.....$4.25@4.50
Double Bit, base weights:
First Quality.....$7.00@7.50
Second Quality.....$6.50@6.75

Axle Grease—
See *Grease, Axle*

Axles— *Iron or Steel*
Concord, Loose Collar..4½@5 ¢
Concord, Solid Collar...4¾@5¼¢
No. 1 Common, Loose..3½@4 ¢
No. 1½ Com., New Style3¾@4¼¢
No. 2 Solid Collar.....3¾@4¼¢
Half Patent:
Nos. 7, 8, 11 and 12....70@75%
Nos. 13 to 14.....70@75%
Nos. 15 to 18.....75@75&5%
Nos. 19 to 22.....75@75&5%

Boxes, Axle—
Common and Concord, not turned lb., 4½@5¢
Common and Concord, turned. lb., 5½@6¢
Half Patent.....lb., 9½@10¢

Bait— Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances— Sash—
Caldwell new list.....50%
Pullman .....50&10@60%

Spring—
Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars— Crow—
Steel Crowbars, 10 to 40 lb..... per lb., 3@3½¢

Towel
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beams, Scale—
Scale Beams.....40%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned.....℔ doz. $1.50
Western W. G. Co.:
No. 1 Electric.....℔ gro. $7.80
No. 2 Buffalo.....℔ gro. $9.00
No. 3 Perfection Dust.....℔ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $5.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.
Turner & Seymour Mfg. Co.:
T. & S. Dover.....$6.00
Western, W. G. Co., ℔ gro., Buffalo, No. 2, $8.00; Perfection, No. 3, $9.00.
Wonder (R. M. Co.)..℔ gro. net, $6.25

Bellows—
Blacksmith, Standard List..
Split Leather.....65%
Grain Leather.....60%

Hand—
Inch..	*6*	*7*	*8*	*9*	*10*
Doz...	*$5.50*	*6.15*	*6.80*	*7.15*	*7.70*

Molders—
Inch..	*9*	*10*	*11*	*12*	*14*
Doz...	*$8.00*	*9.00*	*10.50*	*12.50*	*14.50*

Net Prices.

Bells— Cow—
Ordinary Goods..75&5@75&10&5%
High grade.....70&10@75%
Jersey .....75&10%
Texas Star.....50%

Door—
Abbe's Gong.....40@40&10%
Barton Gong.....50%
Home R. & E. Mfg. Co.'s.....55&10%
Trip Gong.....50@50&10%
Yankee Gong.....40&10@50%

Hand—
Polished, Brass.....50@50&10%
White Metal.....50@50&5%
Nickel Plated.....40&10@50%
Swiss .....50&10@50&10&5%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....25@30%

Miscellaneous—
Farm Bells.....lb., 2¼@2½¢
Church and School.....60%
Table Call Bells.....50@50&10%

Belting— Leather—
Extra Heavy, Short Lap..60&5%
Regular Short Lap....60&10&5%
Standard 70%
Light Standard.....70&5%
Cut Leather Lacing.....45%
Leather Lacing Sides, per sq. ft. 25¢

Rubber—
Agricultural (Low Grade)..... 75@75&5%
Common Standard....70@70&10%
Stanuard .....60&5@60&10%
Extra .....60@60&5%
High Grade.....50&5@50&10%

Bench Stops—
See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.....40%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $30.50.
Green River Tire Benders and Upsetters 25%

Bicycle Goods—
John S. Leng's Son & Co.'s 1907 list:
Chain, Parts, Spokes.....50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—
Common Wooden.....75%
Hartz St. Tackle Blocks.....50@50&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 50%
Stowell's Novelty, Mal. Iron.....50%
Stowell's Loading.....50&10%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c.....40%
Paper Embossed.....40&10%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co.....83⅓%

Bolts—
Carriage, Machine, &c.—
Common Carriage (cut thread):
⅜ × 6 and smaller..70&12½@—%
Larger and Longer..60&2½@—%
Phila. Eagle $3.00 list May 24, '99 80%
Bolt Ends.....65@65&5%
Machine, ⅜ x 4 and smaller.. 70&12½@—%
Machine, larger and longer.. 60&7½@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:
Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz.	*.30*	*.35*	*.45*	*.60*	*.80*

Cast Iron Spring Foot, Jap'd:
Inch.....	*6*	*8*	*10*
Per doz.....	*$1.20*	*1.50*	*2.25*

Cast Iron Chain, Flat, Japanned:
Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.40*	*1.65*

Cast Iron Flat Shutter, Jap'd., Brass Knobs:
Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*.95*	*1.25*

Wrought Barrel Japd..80@80&10%
Barrel Bronzed.....60&10%
Spring .....70&10@70&10&10%
Shutter .....50&5@50&10&5%
Square Neck.....75@75&10%
Square .....70&10&10%
Ives' Patent Door.....50%

Plow and Stove—
Plow .....65&10@—%
Stove .....85@85&10%

Tire—
Common Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '94...80%
Eagle Phila., list Oct. 16, '94....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '94...80%
Eagle Phila., list Oct. 16, '94....82½%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '94....80%
Eagle Phila., list Oct. 16, '94....82½%
Mount Carmel, list Dec. 28, '99...80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '94.....80%
Shelton Co.:
Tiger Brand, list Dec. 28, '99.....80%
Phila., Eagle, list Oct. 16, 1894..82½%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—
Borers Tap, Ring, with Handle: *Inch.....*	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$4.80*	*5.60*	*6.40*	*8.00*
Inch	*2¼*	*2½*		
Per doz.....	*$8.65*	*11.50*		

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

Boxes, Mitre—
C. E. Jennings & Co.....30%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection 40%
Seavey 40%
Stanley R. & L. Co.: Nos. 240 to 460, 30%; Nos. 50 and 60.....35%

Braces—
Common Ball, American..$1.25@1.30
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., B. & W. Co., Peck's Pat.60@60&5%
Stanley R. & L. Co.:
Stanley, 35%; Victor.....45%

Brackets—
Wrought Steel..75&10@75&10&5%
Griffin's Pressed Steel....75&10@80%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf, 75%; Sink...50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods—
See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—
M'f'gr's list, price per gross.

	Quart..	*10*	*12*	*14*	
Water, Reg...	*25.35*	*28.00*	*32.00*		10&5%
Water, Hvy...	*45.35*	*48.00*	*52.00*		
Fire, Rd. Btm.	*32.00*	*34.65*	*38.65*		
Well	*37.35*	*41.35*	*45.35*		

Bucks, Saw—
Hoosier.....℔ gro. $36.00

Bull Rings—See *Rings, Bull*

Butts— Brass—
Wrought, High List, Oct. 26, '06. 45%
Cast Brass, Tiebout's.....40%

Cast Iron—
Fast Joint, Broad....40&10&50%
Fast Joint, Narrow....40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5
Parliament Butts.....70@70&5

Wrought Steel—
	Discount	
Reversible and Broad..	*75%*	*See Trade Report.*
Light Reversible, Light Narrow	*75%*	
Loose Joint, Narrow, Lt't Inside Blind, etc.	*70&10%*	
Back Flaps, Table, Chest	*70%*	

Cages, Bird—
Hendryx Brass: Series 3000, 5000, 1100, 10%; 1200, 25%; 200, 300, 600, 900 .....40%

Hendryx Bronze; Series 700, 800..10%
Hendryx Enameled 10%

Calipers—see *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb., 4¢@4½¢
Sharp, 1 prong...per lb., 4½@4¾¢
Burke's Blunt, 4@4¾¢; Sharp, 4½@4¾¢
Gautier, Blunt, 4@4¾¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	129.00 gro., net.

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket .....per M 62@63¢

Primers—

Berdan Primers, $2 per M..20@5%
Primer Shells and Bullets..15&10%
All other primers per M.$1.52@1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd..$1.90
B. B. Caps, Round Ball....$1.49
Central Fire.....85%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed .....65&5@65&10%
Plate .....60@60&5%
Philadelphia .....70@70&5%
Acme, Ball Bearing.....33⅓%
Boss .....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....60%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Coil—

American Coil, Straight Link:

5-16	¼	5-16	⅜	7-16	½	9-16
$8.77	6.17	5.02	4.57	4.37	4.27	4.22
⅝	¾	⅞ to 1	1⅛ to 1¼ inch.			
$4.17	4.07	4.02	4.12			

In cask lots, deduct 25¢.
German Coil .....60&10&10@70%

Halter—

Halter Chains.....60@60&5%
German Pattern Halter Chains, list July 2½ '97.....60&10&5%
Covert Mfg. Co.
Halter .....35&5%

Cow Ties—

See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6¼—6-3, Straight, with ring..$28.00
6½—6-2, Straight, with ring..$29.00
6¾—8-2, Straight, with ring..$32.00
6½—10-2, Str'ght, with ring..$37.00

NOTE.—Add 2c per pair for Hooks. Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.
Eastern Standard Traces, Wagon Chain, &c.....60%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron .....60&10%
Brass .....50&10%
Safety and Plumbers' Chain, 60&10%
Gal. Pump Chain.....lb. 4@4½%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@60&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl.-Jointed Chain.....50%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft.....$1.25@3.00
Sash Ribbon Attachments, per set..8¢

Chalk—(From Jobbers.)

Carpenters' Blue....gro., 50@55¢
Carpenters' Red.....gro., 45@50¢
Carpenters' White...gro., 40@45¢

Checks, Door—

Bardsley's 45%
Pullman, per gro.....$54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....10%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters,' etc., Chests, with Tools.....25%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—

Socket Framing and Firmer

Standard List.....70&10@75%
Buck Bros.....30%
Charles Buck Edge Tool Co.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....60%
Socket Framing No. 15.....60%
Swan's .....66⅔@70%
L. & I. J. White Co.....30@30&5%

Tanged—

Tanged Firmers.....30&5@35%
Buck Bros.....30%
Charles Buck Edge Tool Co.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

Cold—

lb.
Cold Chisels, good quality..15@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary... 9@10¢

Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat., each $8.00.....35&5%
Empire 25%
Blacksmiths' 25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....40%
Universal, Reversible Jaws.....40%
Combination, Reversible Jaws.....40%
Drill Chucks, New Model, 25%; Standard, 40&10%; Skinner Pat., 25%; Positive Drive.....40%
Planer Chucks.....30%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combination, Nos. 82 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..30%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal 11, 12, 16, 17, 13, 14, 15..35%
Universal, No. 42.....30%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—

Adjustable, Hammers'.....20@20&5%
Carriage Makers', P., S. & W. Co. .....40&10@50%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co. 40%
Wood Workers, Hammers' .....40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz.,
7⅛ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each.$20.00
Stewart's Enclosed Gear Horse, each.....$6.75
Stewart's Patent Sheep Shearing Machine, each.....$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

Clips, Axle—

Regular Styles, list July 1, '05.80%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c. .....60&10@65%
Compression Bibbs...55&10@60%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....90%
Leather, Walter B. Stevens & Son's list 40%

Combs, Curry—

Metal Stamping Co.....40%

Compasses, Dividers, &c.

Ordinary Goods.....70&10@75%
Wm. Schollhorn Co.:
Excelsior Dividers.....55%
Lodi Dividers.....75%

Conductor Pipe,—

L. C. L. to Dealers:

	Galvanized		
	Galv. Steel.	Charcoal Iron.	Copper. 14, 16&20 oz.
Eastern:			
	70%	50&17½%	30%
Central:			
	65&10%	55&21½%	20&10%
Western and Southern:			
	65&5%	50&17½%	20&7½%
So. Western			
	50&25&21½%	50%	20&5%

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal. each..	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	$2.70
Gal.	3	4	6	8	
Iceland, ea.	$1.80	$2.10	$2.40	$3.00	
Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled, 25%; Agate Lined, 25%

Coopers' Tools—

See *Tools, Coopers'.*

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair and heavier, 32@35¢; lighter than 3 lb. to pair.....34@37¢

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 26¢; No. 7, 26½¢; No. 6, 27½¢.
Cable Laid Italian, lb., No. 18..37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India.....lb., 11@11½¢
Cotton Sash Cord, Tw'ted.18@20¢
Patent Russia.....lb...20¢
Cable Laid Russia.....lb...21¢
India Hemp, Br'd'd.....lb...21¢
India Hemp, Twisted..lb.13@15¢
Patent India, Twisted...lb...17¢
Anniston Cordage Co.: ℔ lb, solid Braided, Nos. 8 to 12, $0.24; No. 7, $0.24½; No. 6, $0.25½; ℔ doz., 50 ft., Oriole, $2.00; 50 ft., Columbia, $0.85; 50 ft., Victors, $1.00; 50 ft., 6-Thread, $1.10; 60 ft., 3-Thread, $0.95; 50 ft., Manila, $1.40; 60 ft., Jute, $0.75.
Pearl Braided, cotton, No. 6, ℔ lb. 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢; 7, 26½¢; 6, 27½¢.
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½¢; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....℔ lb 23 ¢
Pullman:
Wire Sash Cord.....18%
Sash Cord Attachments, per doz.10¢
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢ } 15%
Massachusetts, White....℔ lb 40¢
Massachusetts, Drab.....℔ lb 45¢
Phoenix, White, Nos. 8 to 12, 27¢;
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

List July 10, 1906...85&10&10@—
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord 90%

Cradles—

Grain .....40&12½%

Crayons—

White Round Crayons, Cases, 100 gro., $6.50@7.50 at factory, but lower prices made by jobbers
Zelnicker's Lumber, ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.00
Giant Lumbar, 5⅛ in. x 15-16 in. round, all colors, $16.25; Indelibles $18.75
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ⅛ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, $7.00; Light $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor .....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward 40%

Meat and Food—

American 30%

Nos.	401	402	403	404	405	406	407
Each	$5	$7	$10	$12	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32	
Each	$2	$3	$2.75	$4.50	$6	25@25&7½%

No. 202, $1.50.....40&7½%
Dixon's .....℔ doz. 30@30&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal .....40@40&5%
Little Giant.....℔ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....25%
New Triumph No. 605, ℔ doz. $24.00..40@50%
Russwin Food, No. 1, $24.00; No. 2, $27.00 .....45&10&10%
Woodruff's .....℔ doz. 30@30&5%

Nos.	130	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..℔ gr. $18@$20
Slaw Cutters, 2 Knife..℔ gr. $22@$30

Tobacco—

All Iron, Cheap..doz. $1.25@$1.50
Enterprise .....25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 .....40%

Diggers, Post Hole, &c.—

Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $34.00.....25%
Iwan's Imp'ved Post Hole Auger.40&5%
Vaughan Pattern Post Hole Augers. ℔ doz., $6.25
Perfection Post Hole Diggers, ℔ doz. $8.75
Split Handle Post Hole Diggers. ℔ doz., $7.75
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.00; Pioneer.....$7.00
Never-Break Post Hole Diggers, ℔ doz., $24.00.....60%

Dividers—See *Compasses.*

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ℔ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—

See *Knives, Drawing.*

Dressers, Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmiths' Common Drilling Machines .....$1.50@$1.75
Breast, Millers Falls.....60&10
Breast, P., S. & W.....40%
Goodell Automatic Drills.50&10@60&10%
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved 40%
Ratchet, No. 012.....40%
Ratchet, Celebrated.....40%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Bit Stock.....60&10&10@70%
Taper and Straight Shank.... 60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion 50%
Disston's 70%
Edson 60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
New England Specialty Co.....30%
Smith & Hemenway Co., Nevertarn, 40&5%; Elmora.....50%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles, 60&10%; No. 86, 70%; Defiance, 70%; Hurwood, 55%.
Swan's:
Nos. 7565 to 7568, 50%; No. 7540, 40&10%

Eave Trough, Galvanized—

Territory.	*L. C. L. Galvanized*		
	Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*
Eastern:			
	70&30%	*70%*	*30%*
Central:			
	75&10&2½%	*65&10%*	*20&10%*
Western and Southern:			
	70&7½%	*65%*	*20&7½%*
So. Western:			
	75%	*60&10%*	*20&5%*

Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I.
Standard Gauge.....80%
No. 26.....out
No. 24.....25%
No. 22.....net
Copper .....40&10%

Elbows, Stove Pipe—

Edwards, Standard Blue.....40&10&10%
Edwards, Royal Blue.....40&10&10%
Dover, one piece (R. M. Co.)....40&10%
Perfect Elbows.....40%

Emery, Turkish—

	½ to 4&8:	5½ to 220:	Flour.
Kegs .....lb. 5	¢	*5½* ¢	*5¼* ¢
½ Kegs.....lb. 5¼	¢	*5¾* ¢	*5¾* ¢
¼ Kegs.....lb. 5½	¢	6 ¢	¼ ¢
10-lb. cans, 10 in case....6½	¢	7 ¢	6 ¢
10-lb. cans, less than 10.....10	¢	10 ¢	8 ¢
Less quantity..10	¢	10 ¢	8 ¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice

Fasteners, Blind—See *Squeezers, Lemon.*

Zimmerman's .....50&10%
Walling's .....40&10%

Cord and Weight—

Ives 33⅓%

Faucets—

Cork Lined.....50@50&10%
Metallic Key, Leather Lined..60&10@70%
Red Cedar.....40&10@50%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....60%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined...50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—

See *Plates, Felloe.*

Files— Domestic—

List Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—

Stubs' Tapers, Stubs' list, July 2½, '97.....33 1-3@40%

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—

Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz	$3.25	3.75	4.25	4.75

P., S. & W. Co.....30&10%
Reading Hardware Co.....60%
Stowell's Giant Grindstone Hanger, ℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy, 40&10%; Light.....50%

Fodder Squeezers—

See *Compressors.*

Forks—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....66⅔%
Champion, Hay.....66⅔%
Champion, Header.....66⅔%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 time.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—

White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	$1.30	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*

Hemp $2.75
Cotton 3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15

10&5⅓%

Gates, Molasses and Oil—

Stebbins' Pattern.....80&10%

Gauges—

Marking, Mortise, &c..50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....25%
Marking and Mortise.....50%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....30%

Gimlets— Single Cut—

Numbered assortments, per gro.

Nail, Metal, No. 1, $2.00; 2, $2.80
Spike, Metal, No. 1, $4.00; 2, $4.80
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window

See *Trade Report.*

Glasses, Level—

Chapin-Stephens Co.....65@65&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush..25&10@50%
International Glue Co. (Martin's)..40%

Grease, Axle—

Common Grade....gro. $4.50@6.00
Dixon's Everlasting, 10-lb pails, ea. 85¢; in boxes, ℔ doz., 1 lb. $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—

Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20A, $6.00; 20A Combined, $6.50 .....30%
Alundum Disc Grinders, each, $2.50 .....30%

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Halters and Ties—

Cow Ties.....60&5@60&10%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%

Hammers—

Handled Hammers—

Heller's Machinists'...55&10@55&10&5%
Heller's Farriers'.....40&5@40&10&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox, Steel.....50%
Fayette R. Plumb:
A, E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand....50&12½@60%
Machinists' Hammers....50&15@6&5%
Rivet and Tinners'...40&2½@40&12½%

Heavy Hammers and Sledges—

Under 3 lb., per lb., 50¢.80&5@..%
3 to 5 lb., per lb., 40¢.80&5@..%
Over 5 lb., per lb., 30¢....80&10&5@..%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—

Agricultural Tool Handles

Axe, Pick, &c.....60&10@60&10&5%
Hoe, Rake, &c......40@45&5%
Fork, Shovel, Spade, &c.:
Long Handles.....40@45&5%
D Handles.....40%

Cross-Cut Saw Handles—

Atkins' 40%
Champion 50%
Disston's 50%

Mechanics' Tool Handles—

Auger, assorted...gro. $2.50@3.00
Brad Awl.....gro. $1.65@1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@$1.95; Hickory.....$1.45@1.60
Socket Framing, Hickory, $1.60@1.75
File, assorted.....gro. $1.30@1.40
*Hammer, Hatchet, &c.*60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel .....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles .....20&10%
Nicholson Simplicity File Handle, ℔ gro. $0.85@$1.50

Hangers—

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.

Allith Mfg. Co.:
Reliable, No. 1; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50%
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion $2.25
Barn Door, Standard.....60&5%
Hinged .....net $6.08
Covered .....60&2%
Special .....70&5%
Lawrence Bros.:
Advance and Sterling....60&2½%
Cleveland and Peerless..70&7½%
Clipper, No. 75.....60&5%
Crown .....60&2½%
Cyclone-Tandem .. ..net $7.50
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant 60%
Hummer .....70&7½%
New Cyclone, Flexible, $16.00 60%
New York.....60&2½%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60&5%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13,$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22.—50&5%
Trolley B, D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
P lace, Adjustable Track No. 122 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 29.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....30%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas 60%
Baggage Car Door.....50%
Climax Anti-Friction.....50%
Elevator 40%
Express 50%
Lundy Parlor Door.....50%
Matchless 60%
Nansen 70%
Parlor Door, 50&10%; Railroad, 50&10%
Steel, Nos. 300, 404, 500.....50%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Wilbern, No. 0, net, ℔ doz..$9.00
Zenith for Wood Track.....50%
A. L. Sweet Iron Works:
Check Back, 70%; Eagle.....70%
Climax Anti-Friction.....50&10%
Hylo Hinge, New Perfection, Pilot, Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%

Extra 5&10% often given.

Hangers— Garment—

Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled, $27.00; 1 pair Flat Gun Metal, $12.00; 1 pair Flat Black Enameled, $7.50; 1 pair Wood Clamp, $13.50; Skirt Hangers, Folding, per gro., $21.00; Coat Hangers, Folding, per gro., $8.00; Garment Hanger Rods, Round Nickeled, per gro., $10.50; Garment Hanger Loops, Round Nickeled, per gro.....$10.50
Victor Folding.....℔ gro. $9.00
Western, W. G. Co.....75&10%

Gate—

Myers' Patent Gate Hangers, ℔ doz. net $4.50

Joist and Timber—

Lane Bros. Co.....30%

Hasps—

Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—

Regular list, first qual.40&7½&—
Second quality.....50&10@—

Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ℔ doz., $0.75.....20%

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	$0.75	1.35	2.70

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....70&10&2½%
Acme, Lull & Porter.....70&5&2½%
Queen City Reversible.....70&5&2½%
Shepard's Noiseless, Nos. 60, 65, 55 .....70&10&2½%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....10&10&2½%
1868, Old Pat'n, No. 1.....75%
Nos. 3 & 5.....70&10&2½%
Tip Pat'n, No. 1.....75%
No. 3.....70&10&2½%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&5%
Shepard's Double Locking.70&5&2½%
Champion Gravity Locking.....70&10&2½%
Pioneer 75%
Empire 60%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L't'chs.	$2.00	2.70	5.00
Hinges only.....	1.40	2.05	3.80
Latches only.....	.70	.70	.85

New England:
With Latch.....*doz.*...@$2.00
Without Latch...*doz.*...@$1.60
Reversible Self-Closing:
With Latch.....*doz.*...@$1.75
Without Latch...*doz.*...@$1.35
Western:
With Latch.....*doz.* $1.75
Without Latch.....*doz.* $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....65&5%

Pivot Hinges

Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50%

Spring Hinges—

Holdback, Cast Iron...$6.50@$7.00
Non-Holdback, Cast Iron$6.25@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot. Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor..50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, ℔ gr., No. 14, $9.00; No. 18, $25.00
Columbia, Adj., No. 7, ℔ gr. $12.00
Columbian Hinges.....60&10%
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Lawson Mfg. Co. Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearing Floor Hinge 50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr., pr.....$9.00
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting....50%
New Idea Floor.....50%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges...65%
Heavy Strap Hinges..70%
Light T Hinges.....60%
Heavy T Hinges.....50%
Extra H'y T Hinges.66⅔%
Hinge Hasps.....45%
Cor. Heavy Strap.....70%
Cor. Ex. Heavy T..66⅔%

See Trade Report.

Screw Hook and Strap.
6 to 12 in...lb. 5½¢
13 to 20 in...lb. 5½¢
22 to 36 in...lb. 5½¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6½¢
⅝-inch.....lb. 7½¢
½-inch.....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross.

	16	17	18	
Inch				
Galv. Open	$35	$39	$42	$46
Jap. Open	26	28	31	35
Galv. Funnel	43	48	52	56
Jap. Funnel	33	36	39	42

10&5%

Masons' Etc.—
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Eye—
Scovil and Oval Pattern.....60&10@60&10&10%
Grub, list Feb. 23, 1899.....70&10@75&10%
D. & H. Scovil.....30%

Handled—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Cronk's Weeding, No. 1, $2.75; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 66⅔%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe..₱ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ironhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.35
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱doz.$4.85

Hoisting Apparatus—
See *Machines, Hoisting.*

Holders— Bit—
Angular, ₱ doz. $24.00.....45&10%

Door—
Bardsley's, Iron, 40%; Brass and Bronze.....33⅓%
Empire.....50%
Pullman.....35%
Superior.....33⅓%

File and Tool—
Nicholson File Holders and File Handles.....33⅓@40%

Fruit Jar—
Triumph Fruit Jar Holder, ₱ gross, $10.80; ₱ doz.....$1.25

Trace and Rein—
Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz. pairs..$1.25

Hones—Razor—
Pike Mfg. Co., Belgian, German and Swaty.....50%

Hooks—Cast Iron—
Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—
Belt.....80%
Wire C. & H. Hooks.....75@75&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

Wrought Iron—
Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....*doz. $1.05@$1.25*
Wrought Staples, Hooks, &c.—See Wrought Goods

Miscellaneous—
Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25
Grass, best, all sizes, per doz.$1.60
Grass, common grades, all sizes, per doz......*$1.30*
Whiffletree.....*lb. 5¾@6¢*
Hooks and Eyes:
Brass.....60&5@60&10&5%
Malleable Iron.....70@70&10%
Owens Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....80&10&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See *Nails, Horse.*

Horseshoes—
See *Shoes, Horses.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition.....*ft. 5 @ 6 ¢*
3-ply Guaranteed..*ft. 8 @ 9 ¢*
4-ply Guaranteed..*ft. 10 @11 ¢*
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8 @ 9 ¢*
Fair Quality.....*ft. 10 @11 ¢*

Irons—Sad—
From ¼ to 10.....*lb. 3 @3¼¢*
R. B. Sad Irons.....*lb. 3¼@3½¢*
Mrs. Potts', cents per set:

Nos.	50	55	60	65
Jap'd Tops	80	77	90	88
Tin'd Tops	85	82	95	92

New England Pressing..lb. 3¾@4¼¢

Pinking—
Pinking Irons.....*doz. 80¢*

Irons, Soldering
See *Coppers.*

Jacks, Wagon—
Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lane's Steel.....30&10&2%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Kettles—
Brass, Spun, Plain.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

Knives—
Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....33⅓
Wilkinson Shear & Cutlery Co.....60%

Corn—
Wilkinson Shear & Cutlery Co., Wilcut Brand Knives and Hooks.60%
Wittington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—
Standard List.....*75&5@75&10%*
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42....75%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—
Serrated Edge, per doz..$5.50@5.75
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

Mincing—
Buffalo.....₱ gro. $13.00

Miscellaneous—
Farriers'.....*doz. $3.00@3.25*
Wostenholm's.....₱ doz. $3.00@3.25

Knobs—
Base, 2½-inch, Birch, or Maple, Rubber Tip.....*gro. $1.85@$1.40*
Carriage, Jap., all sizes.....*gro. 40@45¢*
Door, Mineral.....*doz. 65@70¢*
Door, Por. Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

Lacing, Leather—
See *Belting, Leather—*

Ladders, Store, &c.—
Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—
L. & G. Mfg. Co. (low list).....25%
P. S. & W.....40&10%
Reading.....60%

Lanterns—Tubular—
Regular Tubular, No. 0.....*doz. $4.25@4.50*
Lift Tubular, No. 0.....*doz. $4.75@5.00*
Hinge Tubular, No. 0.....*doz. $4.75@5.00*
Other Styles.....*40@40&5%*

Bull's Eye Police—
No. 1, 2¾-inch.....*$2.75@3.00*
No. 2, 3-inch.....*$3.00@3.25*

Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—
Roggin's Latches, with screw..*doz. 35@40¢*

Door—
Allith Mfg. Co., Automatic, No. 400, ₱ doz.....$4.00
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....60%
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50
Stowell's Steel.....50%

Leaders, Cattle—
Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Lifters, Transom—
R. & E.....10%

Lines—

Wire Clothes, Nos.	18	19	20
100 feet	$2.25	2.00	1.75
75 feet	$1.75	1.35	1.10

Anniston Waterproof Clothes, 50 ft., ₱ gro., $25.00; Gilt Edge, $23.00; Air Line, $23.00; Acme, $18.00; Alabama, $17.00; Empire, $16.00; Advance, $14.00; Eclipse, $13.50; Chicago, $11.50; Standard, $10.50; Columbia, $9.50; Allston, $13.50; Calhoun, $12.00.
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $8.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 120 ft., $5.25.....20%

Locks— Cabinet—
Cabinet Locks.....*33⅓%*

Door Locks, Latches, &c
NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Elevator—
Stowell's.....50%

Padlocks—
R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—
Ives' Patent:
Bronze and Brass, 60%; Crescent, 40&20%; Iron, 60%; Window Ventilating, 55%; Robinson Pat. Ventilating Sash Lock, 33⅓%; Wrought Bronze and Brass, 55%; Wrought Steel, 55%.
Pullman Patent Ventilating Lock..35%
Reading.....40%

Machines—Boring—
Com. Upr't, without Augers, $2.00@2.25
Com. Angl'r, without Augers, $2.25@2.50
Swan's Improved.....60&10%
Jennings', Nos. 1 and 4.....33⅓%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

Corking—
Reisinger Invincible Hand Power.....₱ doz. $12.00

Fence—
Williams' Fence Machines....each, $5.50

Hoisting—
Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

Ice Cutting—
Chandler's.....12½%

Washing
Boss Washing Machine Co.: Per doz.
Boss No. 1.....$57.00
Boss Rotary.....$57.00
Champion Rotary Banner No. 1.$57.00
Standard Champion No. 1.....$50.00
Standard Perfection.....$27.00
Cincinnati Square Western.....$33.00
Uneeda American, Round.....$33.60

Mallets—
Hickory.....*45&5@50%*
Lignumvitæ.....*45&5@50%*
Tinners' Hickory and Apple-wood.....*doz. 45&5@50%*

Mangers, Stable—
Swett Iron Works.....50%

Mashers, Vegetable—
Western, W. G. Co., Potato....60&10%

Mats, Door—
Elastic Steel (W. G. Co.), new list.50%
Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

Mattocks—
See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—
Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Motors Water—
Divine's Red Devil.....30%

Mowers, Lawn—
NOTE.—Net prices are generally quoted
Cheapest.....*all sizes, $1.85@2.00*
Cheap.....*all sizes, $2.00@2.50*
Better Grade..*all sizes, $2.50@4.50*

	12	14	16	18-in.
High Grade	$4.50	4.75	5.00	5.25

Continental.....60&5%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&3%
Granite State:
Style A, Low Wheel.....70&10&10%
Style B, Low Wheel.....70&10%
Style C, High Wheel, spcl. disct., 70&10%
Style D, High Wheel, spcl. disct.70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

Nails—
Wire Nails and Brads, Miscellaneous.....*85¢10@85¢10&5%*
Cut and Wire, See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	lb...40&5%
Champlain	28	26	25	24	23	..50%
Coleman	13	12	12	11	11	..net
New Haven	23	21	20	19	18	..40&5%
Livingston	19	18	17	16	16	..10%

Western.....₱ lb 8½¢
Jobbers' Special Brands.....*per lb. 9@10¢*

Picture—

	2½	2¾	3	
Brass H'd	.45	.55	.60	.70 .. *gro*
Por. Head	1.10	1.10	1.10	.. *gro*

Nippers—
See *Pliers and Nippers.*

Nuts—
Cold Punched: *Off list.*
Square, Blank or Tapped..*4.80¢*
Hexagon, Blank or Tapped..*5.10¢*
Square, Bl'k, C., T. & R...*5.10¢*
Hexagon, Bl'k, C., T. & R..*5.70¢*
Hot Pressed:
Square, Blank.....*5.00¢*
Hexagon, Blank.....*5.40¢*
Square, Tapped.....*5.70¢*
Hexagon, Tapped.....*5.10¢*

Oakum—
Best.....*lb., 6¼¢*
U. S. Navy.....*lb., 6¢*
Navy.....*lb., 5¢*
Plumbers' Spun Oakum.....*8¾¢*
In carload lots ⅛¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper.....*50&10%*
Tin or Steel.....*65&10&5@70%*
Zinc.....*65&10&5@70%*
Chase or Paragon:
Brass and Copper.....*50&10%*
Tin or Steel.....*65&10%*
Zinc.....*65&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can— *Per doz.*
Sprague, Iron Handle.....*90@35¢*
Sprague, Wood Handle.....*35@40¢*
Sardine Scissors.....*$1.75@$3.00*
Vim Tin Shear and Can Opener, ₱ doz., 75c.; per gro., $7.50
Yankee Can and Bottle Opener, ₱ doz., net.....$0.75

Egg—
Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

Packing—
Asbestos Packing, Wick and Rope.....*20@25¢*

Rubber—
(Fair quality goods.)
Sheet, C. I......*11@12¢*
Sheet, C. O. S......*11@12¢*
Sheet, C. B. S......*12@13¢*
Sheet, Pure Gum.....*40@45¢*
Sheet, Red.....*40@50¢*
Jenkins' '96, ₱ lb. 80¢.....25%

Miscellaneous—
American Packing...*lb. 7@10 ¢*
Cotton Packing.....*lb. 16@25 ¢*
Italian Packing.....*lb. 9@12½¢*
Jute.....*lb. 4@4½¢*
Russia Packing.....*lb. 8@11 ¢*

Pails, Creamery—
R. M. Co., with gauges, ₱ doz., No. 1, $6.25; No. 2, $6.50.

Pails, Water, Well, &c.—
See *Buckets.*

Pans— Dripping—
Standard List.....*70&10%*
Edwards, Royal Blue.....65&7½%

Fry—
Common Lipped:

Nos.	1	2	3	4	5
Per doz	$0.75	0.80	0.90	1.10	1.30

Refrigerator, Galva.—

Inch	12	14	16	18
Per doz	$1.75	2.25	2.80	3.15

Roasting and Baking—
Regal, R. M. Co., ₱ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ₱ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ₱ gro.:

No.	40	50	60	140	150	160
	$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper,
Asbestos: *lb.*
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.3½@5¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....*6¢*
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....*3@15¢*
Per roll
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll *40@50¢*
Medium weight, 30 lbs. to roll. *50@55¢*
Heavy weight, 40 lbs. to roll.. *65@70¢*
Black Water Proof Sheathing. 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....*$50.00*
Red Rope Roofing, 250 sq. ft. per roll.....*$1.75*

Tarred Paper—
1 ply (roll 400 sq. ft.), ton..... *$31.00@$35.00*
2 ply, roll 108 sq. ft.....*57¢*
3 ply, roll 108 sq. ft.....*80¢*
Slater's Felt (roll 500 sq. ft.).76¢

Sand and Emery—
Flint Paper and Cloth.50&10@—%
Garnet Paper and Cloth.....*25%*
Emery Paper and Cl'h..50&10@60%

Parers— Apple—
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Bonanza Improved.....each $6.50
Daisy.....₱ doz. $4.50
Dandy.....each $7.50
Eureka Improved.....each $20.00
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
Little Star.....₱ doz. $5.00
New Lightning.....₱ doz. $7.00
Reading 72.....₱ doz. $3.75
Reading 78.....₱ doz. $4.25
Rocking Table.....₱ doz. $6.00
Turn Table.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00

Potato—

Saratoga ..... ℔ doz. $7.00
White Mountain ..... ℔ doz. $6.00

Picks and Mattocks—

List, Feb. 23, 1899 ..... 70&10@75%
Cronk's Handled Garden Mattock, ℔ doz., No. 2, $2.60; No. 3, $6.40.

Pinking Irons—

See *Irons, Pinking.*

Pins, Escutcheon—

Brass ..... 50&10@60%
Iron, list Nov. 11, '85 ..60@60&10%

Pipe, Cast Iron Soil—

Carload lots.
Standard, 2-6 in. 50&10@50&10&5%
Extra Heavy, 2-6 in. ..... 65&10%
Fittings ..... 70&10@70&10&5%

Pipe, Merchant—

Consumers, Carloads.

	Steel. Blk.	Galv.	Iron. Blk.	Galv.
	%	%	%	%
⅛ & ¼ in...	66	50	59&5	45&5
⅜ in.....	68	54	61&5	45&5
½ in.....	70	58	63&5	51&5
¾ to 6 in...	74	64	68&5	58&5
7 to 12 in...	69	54	63&5	48&5

Pipe, Vitrified Sewer—

Carload lots.
Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:
First-class 81½
Second-class 87½
NOTE.—Market irregular.

Pipe, Stove—

	Per 100 joints. C. L.	L. C. L.
Edwards' Nested:		
5 in., Standard Blue...	$6.25	$7.25
6 in., Standard Blue....	6.75	7.75
7 in., Standard Blue....	7.75	8.75
5 in., Royal Blue.....	7.00	8.00
6 in., Royal Blue.....	7.50	8.50
7 in., Royal Blue.....	8.50	9.50

Planes and Plane Irons—

Wood Planes—

Bench, first qual. ..... 30@30&10%
Bench, second qual. ..40@40&10%
Molding ..... 25@25&10%
Bailey's (Stanley R. & L. Co.) ..35&2½%
Chapin-Stephens Co.:
Bench, First Quality 30%
Bench, Second Quality 40%
Molding and Miscellaneous 25%
Toy and German 30%
Union 60%

Iron Planes

Bailey's (Stanley R. & L. Co.) 35%
Chapin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 30&5%
Union 60%

Plane Irons—

Wood Bench Plane Irons, list Dec. 12, '06. ..... 25%
Buck Bros. 30%
Chapin-Stephens Co. 25%
Stanley R. & L. Co. 35%
Union 50%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand—

Kohler's Eclipse ..... ℔ doz. $8.00

Plates—

Fellow ..... lb. 4@4¼¢
Self-Sealing Pie Plates (R. M. Co.) ℔ doz. $2.00 ..... 50%

Pliers and Nippers

Button Pliers ..... 75@75&10%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.

Gas Pipe..	7	8	10	12-in.
	$2.00	$2.25	$2.75	$3.50

Acme Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button 80%
Improved Button ..... 75&10%
Cronk's 60%
No. 80 Linemen's 50%
Stub's Pattern 45%
Combination and others 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&5@40&10&5%
The Nettleton Mfg. Co. Reversible Cutting Nippers 40%
P., S. & W. Tinners' Cutting Nippers 40%
Wm. Schollhorn Co.:
Bernard, 33⅓%; Elm City, 33⅓%; Paragon, 50%; Lodi, 50%.
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cor. 40@40&10%
Pocket Levels ..... 30@30&10%
Extension Sights ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston's Plumbs and Levels ..... 60&10%
Disston's Pocket Levels ..... 60&10%
C. E. Jennings & Co.'s Iron 33⅓%
C. E. Jennings & Co.'s Iron, Adjustable ..... 40&7½%
Stanley R. & L. Co. 40%
Stanley's Duplex 35%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00 ..... 50%

Points, Glaziers'—

Bulk and 1-lb. papers, ... lb. 10¢
½-lb. papers ..... lb. 9@10½¢
¼-lb. papers ..... lb. 9½@11¢

Pokes, Animal—

Ft. Madison Hawkeye ..... ℔ doz. $3.25
Ft. Madison Western ..... ℔ doz. $4.00

Police Goods—

Manufacturers' Lists ...25@25&5%
Peerless 25%

Polish—Metal, Etc—

Glasbrite, No. 2, 5 lb can (powder), each, $1.25; ℔ doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; ℔ doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50, ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barnesperr' Friend Metal Polish, ℔ doz., $1.75.

Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans, ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can.....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins $6.75
Joseph Dixon's, ℔ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50 ..... 10%
Japanese ..... ℔ gr. $3.50
Jet Black ..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50
Wynn's Black Silk:
Paste, cans, ℔ doz., 5 oz., $0.75; ½ lb, $1.00; 1 lb $1.75
Paste, ℔ 5 lb can $0.70
Liquid, cans, ℔ doz., 6 oz., $0.75; ½ pt., $1.00; 1 pt $1.75
Steel Range Enamel, ℔ doz., ¼ pt., $1.00; ½ pt., $1.25.

Poppers, Corn—

1 qt. Square..doz. $0.80; gro. $8.00
1 qt. Round..doz. $0.90; gro. $9.00
1½ qt. Square.doz. $1.00; gro. $10.00
2 qt. Square..doz. $1.20; gro. $12.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts ..... each $1.30

Potato Parers—

See *Parers, Potato.*

Pots, Glue—

Enameled ..... 35&10%
Tinned ..... 30&10%

Powder—

In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
In Kegs:
12½-lb. kegs.....$3.50
25-lb. kegs.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk) $6.50
Half Keg (12½ lb bulk) $3.50
Quarter Keg (6¼ lb bulk) $1.90
Case 24 (1 lb cans bulk) $8.50
Half case (1 lb cans bulk) $4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Robin Hood Sm'less Shot Gun..50&20%

Presses—

Fruit and Jelly—

Enterprise Mfg. Co. ..... 20@25%

Seal Presses—

Morrill's No. 1, ℔ doz., $20.00 ..... 50%

Pruning Hooks and Shears

See *Shears.*

Pullers, Nail—

Cyclops 50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
Scranton, Case Lots:
No. 2B (large) $5.50
No. 3B (small) $5.00
Smith & Hemenway Co.:
Diamond B, case lots, ℔ doz., Large, $9.00; Small, $7.50.
Giant No. 1, ℔ doz., $18; No. 1½, $16.50; No. 3, $15 ..... 33⅓%
Staple Pullers, Utica and Davison 60%
Parrot Tack and Stub Puller, ℔ doz., 75c.; ℔ gro., $6.00

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05

Hay Fork, Swivel or Solid Eye. doz., ½ in., $1.25; 5 in., $1.55

Inch	2	2¼	2½
Hot House, doz...	$0.65	.85	1.20
Inch	1¼	1½	1¾ 2
Screw, doz...	$0.16	.19	.23 .30
Inch	1¾	2	2¼ 2½
Side, doz...	$0.25	.40	.55 .60
Inch	1½	1¾	2 2½

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light 60%
Side, Anti-Friction ..... 60&10%

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1¾ and 2 in.....s..... 16@19¢
Auger Mortise, no Face Plate per doz., 1¾ and 2 in.... 17@19¢
Acme, No. 35..1¾ in., 18½¢; 2 in., 20½¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal ..... 70&5%
Niagara, No. 25, 1¾ in., 18½¢; 2 in., ... 20½¢
No. 26, Trov..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26...1¾ in., 18½¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—

Cistern 60%
Pitcher Spout.....75&5@75&10%
Wood Pumps, Tubing, &c..45@50%
Barnes Dbl. Acting (low list)..40&10%
Barnes Pitcher Spout ..... 75&10%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co. $16 00
Daisy Spray Pump ..... ℔ doz. $6.50
Flint & Walling's, Fast Mail Hand, (low list) 55%
Flint & Walling's Fast Mail (low list) 55%
Flint & Walling's Tight Top Pitcher. 75&10&5%
National Specialty Mfg. Co. Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30%
Myers' Pumps (low list) ..... 40&10%
Myers' Power Pumps ..... 40&10%
Myers' Spray Pumps ..... 40&10%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch...	2	2¼	2½	2¾
	$2.20	2.50	2.75	3.00
Inch...	3	3¼	3½	3¾ 4
	$3.30	3.60	3.85	4.10 4.40

Plunger Cup Leathers—Per 100:

Inch...	2½	3	3½	4
	$2.75	3.85	5.00	6.00

Punches—

Saddlers' or Drive, good..... doz. 50@75¢
Spring, single tube, good quality ..... $1.75@2.00
Revolving (4 tubes) ..... *doz. $3.50@3.75*
Bemis & Call Co.'s Cast St'l Drive..50%
Morrill's Nos. 1AA, 1A, 1B, 1C, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches 40%
Niagara Solid Punches ..... 55&10%
Wm. Schollhorn Co.:
Belt and Ticket, Bernard, 33⅓%; Paragon, 50%; Lodi 50%
Tinners' Hollow, P., S. & W. Co. 33⅓%
Tinners' Solid, P., S. & W. Co. ℔ doz., $1.44 ..... 50%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron ..... 2½@2¾¢
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢ 30%
Allith Mfg. Co.: Reliable Hanger Track 50%
Cronk & Carrier Mfg. Co.:
Double Braced Steel Rail..℔ ft. 3¼¢
O. N. T. Rail ..... 3¢
Hinge Rail ..... 396¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.80.
Lane's:
Hinged Track, ℔ 100 ft., 1 in., $3.40; 1¼ in., $3.90.
O. N. T., ℔ 100 ft., 1 in., $3.00; 1¼ in., $3.60; 1½ in., $4.00.
Standard, 1¼ in ..... ℔ 100 ft. $4.00
Lawrence Bros.:
℔ 100 ft. No. 201, $4.00; No. 202, $4.00
New York, 1 x 3-16 in., ℔ 100 ft. $3.00
McKinney's:
Hinged Hanger Rail, ℔ ft., 11¢ ..50%
None Better ..... ℔ ft. 3¾¢
Standard ..... ℔ ft. 4¢
Myers' Stayon Track ..... 60&10%
Richards' Mfg. Co.:
Common, 1 x 3-6 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢ ..... 60&10%
No. 50 .....
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.
Stowell's:
Cast Rail ..... ℔ ft. 2¼¢
Steel Rail, Plain 25%
Wrought Bracket, 1 3-16 in.... ℔ ft. 3¢
Wrought Bracket, 1⅛ x 5-16.. ℔ ft. 7¢
Swett's Hylo, ℔ ft. 11¢ 60%
P. L. B. Steel Rail ..... ℔ 100 ft. $3.00
No. 0, 1 x 3-16 ..... ℔ 100 ft. $3.00

Rakes—

NOTE.—Many goods are sold at net prices.

Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ℔ doz., net $4.25
Cronk's:
New Champion Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00 ..... 80%
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn, ℔ doz $4.00
Malleable Garden ..... 70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Lawn Queen, 20-tooth....℔ doz. $2.90
Lawn Queen, 24-tooth....℔ doz. $3.00
Paragon, 20-tooth ..... ℔ doz. $2.70
Paragon, 24-tooth ..... ℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

Rasps, Horse—

Disston's 75%
Heller Bros. ..... 70&5@70&10&5%
Liverlight Bros.' Gold Medal..70&10@75%
New Nicholson ..... 70&10@75%
See also Files.

Razors—

Liana Bo-ras-ic 60%
Fox Razors, ℔ doz., No. 42, $30.00; No. 44, $20.00; No. 82, Platina, $25.00 } 50%
Red Devil 50%
Silberstein:
Carbo Magnetic, $21.00; Griffon, No. 65, $13.50; Griffon, No. 00, $12.00; all other Razors, 40%.

Safety Razors—

Kampfe Bros.:
Star Safety, 25%; Star Interchangeable, 25%; Star Safety Corn, 25%.
Silberstein 40%

Reels, Fishing—

Uendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo 20%
Aluminum, German Silv., Bronze..25%
1240 N, 124 N 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN 20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓% .....
986 PN, 2904 N, 974 PN 25%
5009 PN, 5009 N 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR 20%
304 P, 304 PN, 00304 P, 00304 PN..33⅓%

Registers—*List July 1, 1903.*

Japanned, Electroplated and Bronzed ..... 66⅔@66⅔&10%
White Porcelain Enamel.....60%
Solid Brass or Bronze Metal, 40&10%

Revolvers—

Single Action ..... 95¢@$1.00
Double Action, except 44 cal. $1.85
Double Action, 44 caliber....$2.00
Automatic $3.25
Hammerless $3.75

Riddles, Hardware Grade

16 in.....per doz. $2.50@$2.75
17 in.....per doz. $2.75@$3.00
18 in.....per doz. $3.00@$3.25

Rings and Ringers—

Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.00	1.15	1.40 doz.

Rea's Improved Self-Piercing, ℔ doz., Copper, 2 in., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—

Hill's Rings, gro. boxes.$4.00@$4.50
Hill's Ringers, Gray Iron..... doz. 50@55¢
Hill's Ringers, Malleable Iron.. doz. 70@75¢
Blair's Rings...per gro.$4.75@5.25
Blair's Ringers.per doz. $0.60@ .65
Brown's Rings..per gro.$5.00@5.50
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—

Copper ..... 33⅓ @35%
Carriage, Coopers', Tinners, &c.:
Black ..... 70&10%
Metallic Tinned 70%

Bifurcated and Tubular—

Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 23@25¢; Tin boxes, 29@32¢.
Tubular, per doz. boxes, 50 count, 72¢; 100 count, 51@58¢.

Rollers—

Acme, Stowell's Anti-Friction 50%
Cronk's Stay No. 65, $0.90; No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56 ..... $0.84
Lane's Stay 40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%
Stowell's Barn Door Stay..℔ doz. $1.00
Swett's Anti-Friction 50%
Screw and Spike Stay ..... ℔ doz. 65¢
Hinge Adjustable Stay ..... ℔ doz. 90¢

Rope—

Manila, 7-16 in. diam. and larger: Pure ..... lb., 12½@13¢
Sisal, 7-16 in. diam. and larger: Pure ..... lb., 9½¢
Sisal, 7-16 in. diam. and larger: No. 2 quality..... lb., 7¾@8¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed ..... lb., 7¾@8¢
Pure ..... lb., 9½¢
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred: Mixed ..... lb., 7@7½¢
Pure ..... lb, 8¢
Cotton Rope: Best, ¼-in. and larger...17@18¢
Medium, ¼-in. and larger.16@17¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope: Thread, No. 1, ¼-in. & up, lb..9¢
Thread, No. 2, ¼-in. & up, lb..8½¢
Old Colony Manila Transmission Rope ..... ℔ lb 17½¢

Wire Rope—

Galvanized ..... 37½&2½%
Plain ..... 45&2½%

Ropes, Hammock—

Covert Mfg. Co.:
Jute, 35%; Sisal 20%

Rules

Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory ..... 25@25&10%
Miscellaneous ..... 55@55&10%
Stephens' Combination 55%
Stationers' 10%

Keuffel & Esser Co.:
Folding, Wood....35&10%
Folding, Steel....33⅓&10%
Lufkin's Steel....50&10%
Lufkin's Lumber....60%
Stanley R. & L. Co.:
Boxwood....60%
Ivory....45%
Miscellaneous....40%
Zig Zag....40%
Zig Zag, Pin Joint....42½%
Upson Nut Co.:
Boxwood....60@60&10%
Ivory....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins':
Circular....45%
Band....50@50&10%
Butcher Saws....50%
Cross Cuts....35%
One-Man Cross Cut....40%
Narrow Cross Cut....50%
Hand, Rip and Panel....35&5%
Miter Box and Compass....40%
Mulay, Mill and Drag....45%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth..50%
Band, 2 to 18 in. wide....60%
Band, ¼ to 1¾....60%
Crosscuts....45%
Narrow Crosscuts....50%
Mulay, Mill and Drag....50%
Framed Woodsaws....25%
Woodsaw Blades....25%
Woodsaw Rods, Tinned....15%
Hand Saws, Nos. 12, 10, 9, 16, d100, D8, 120, 76, 77, 8....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination....30%
Compass, Key Hole, &c....25%
Butcher Saws and Blades....30%
C. E. Jennings & Co.'s:
Back Saws....25%
Butcher Saws....30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws....30%
Hand Saws....20&2½%
Wood Saw Blades....35%
Millers Falls:
Butcher Saws....15&10%
Star Saw Blades....15&10%
Massachusetts Saw Works:
Victor Kitchen Saws....40&10&50%
Butcher Saws Blades....35@40%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws....45%
Crescent Ground Cross Cut Saws..30%
One-Man Cross Cuts....40&10%
Gang Mill, Mulay and Drag Saws..45%
Band Saws....50%
Back Saws....25@25&7½%
Butcher Saws....35@35&7½%
Hand Saws....25@25&7½%
Hand Saws, Bay State Brand....45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws....40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws....50%

Hack Saw Blades and Frames—
Atkins' Hack Saw Blades A A A...35%
Disston's:
Concave Blades....25%
Keystone Blades....35%
Hack Saw Frames....30%
Simonds File Co....35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades....40&10%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Star Hack Saws and Blades....15&10%
Sterling Hack Saw Blades...30&10&5%
Sterling Hack Saw Frames..30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades....25%
Victor Hack Saw Frames....40%

Scroll—
Barnes, No. 7, $15....35%
Barnes' Scroll Saw Blades....30%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20....20%
Lester, complete, $10.00....15&10%
Rogers, complete, $3.50 and $4.00..15&10%

Scales—
Family, Turnbull's....50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs....doz. $5.50
Two Platforms, ½ oz. to 8 lbs....doz. $18.00
Union Platform, Plain..$1.70@1.90
Union Platform, Stpd..$1.85@2.15
Chatillon's:
Eureka....25%
Favorite....40%
Crocers' Trip Scales....50%
Chicago Scale Co.:
The Little Detective....25 lbs 50%
Union or Family No. 2....60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list)..25@35%
The Standard Portables....45%
The Standard R. R. and Wagon....50&10%

Scrapers—
Box, 1 Handle....doz. $2.00@2.25
Box, 2 Handle....doz. $3.50@3.60
Ship....Light, $2.00; Heavy, $4.50
Adjustable Box Scraper (S. R. & L. Co.), $6.00....15%
Chapin-Stephens Co., Box...30@30&10%

Screws—Bench and Hand
Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75
Bench, Wood....20@20&10%
Hand, Wood....20@20&10%
R. Bliss Mfg. Co., Hand..20&5@20&10%
Chapin-Stephens Co., Hand....20%

Coach, Lag and Hand Rail—
Lag, Cone Point, list Oct. 1, '99....75&15%
Coach, Gimlet Point, list Oct. 1, '99....75&10%
Hand Rail, list Jan. 1, '81....70&10@75%

Jack Screws—
Standard List....75%
Millers Falls....50&10&10%
P., S. & W....50%
Swett Iron Works....75@80%

Machine—
List Jan. 1, '98:
Flat or Round Head, Iron....50@50&10%
Flat or Round Head, Brass....50@50&10%

Set and Cap—
Set (Iron)....75&10&7½%
Set (Steel), net advance over Iron....25%
Sq. Hd. Cap....70&10&7½%
Hex. Hd. Cap....70&10&7½%
Rd. Hd. Cap....50&7½%
Fillister Hd. Cap....60&7½%

Wood—
List July 23, 1903.
Flat Head, Iron....87½&5@..%
Round Head, Iron....85&5@..%
Flat Head, Brass....82½&5@..%
Round Head, Brass....80&5@..%
Flat Head, Bronze..77½&5@..%
Round Head, Bronze..75&5@..%
Drive Screws....87½&5@..%

Scroll Saws—
See *Saws, Scroll.*

Scythes—
Per doz.
Grass, No. 1, Plain....$6.25@6.75
Clipper, Bronzed Webb..$6.50@7.00
No. 3 Clipper, Pol'd Webb..$6.75@7.25
No. 6 Clipper and Solid Stee., $7.00@7.50
Bush, Weed and Bramble, No. 2 $6.50@7.00
Grain, No. 1....$8.25@8.75
Bronzed Webb, No. 1..$8.50@9.00
Nos. 3 and 4 Clipper, Grain..$8.75@9.25
Solid Steel, No. 6....$9.25@9.75

Seeders, Raisin—
Enterprise....25@30%

Sets—Awl and Tool—
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7....50%
C. E. Jennings & Co.'s Model Tool Holders....30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%

Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel....doz sets $9.00

Sets, Nail—
Octagon....gro. $3.50@3.75
Buck Bros....27½%
Cannon's Diamond Point, ℔ gro. $12..40&10%
Mayhew's....℔ gro. $9.00
Snell's Cor'gated, Cup Pt...℔ gro. $7.20
Snell's Knurled, Cup Pt....℔ gro. $7.20
Victor Knurled Cup Pt....℔ gro. $7.50

Rivet—
Regular list....75@75&10%

Saw—
Atkin's:
Criterion....40%
Adjustable....40%
Disston's Star, Monarch and Triumph....30%
Morrill's No. 1....$15.00
Nos. 3 and 4, Cross Cut....$20.60
No. 5, Mill....$30.00
Nos. 10, 11, 95....$15.60
No. 1 Old Style....$10.00
Special....$16.25
Giant Royal Cross Cut....℔ doz. $8.00
Royal, Hand....℔ doz. $4.50
Taintor Positive....℔ doz. $6.75

Shaving—
Fox Shaving Sets, No. 20....℔ doz., net, $24.00
Smith & Hemenway Co.'s....60%

Sharpeners, Knife—
Chicago Wheel & Mfg. Co....70%
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz....$1.50
Mounted Kitchen Sand Stone, ℔ doz....$1.50
Natural Grit Carving Knife Hones, ℔ doz....$3.00
Quick Cut Emery Carving Knife Hones, ℔ doz....$1.50
Quick Edge Pocket Knife Hones, ℔ doz....$2.00

Skate—
Smith & Hemenway Co., Eureka..20%

Shaves, Spoke—
Iron....doz. $1.10@1.25
Wood....doz. $1.75@2.25
Bailey's (Stanley R. & L. Co.)....45%
Razor Edge (Stanley R. & L. Co.), Iron, 50%; Wood....55%
Chapin-Stephens Co....30@30&10%
Goodell's, ℔ doz. $9.00....15&10%
Wood's F1 and F2....50%

Shears—
Cast Iron..	*7*	*8*	*9 in.*	
Best	*$16.00*	*18.00*	*20.00*	*gro.*
Good	*$13.00*	*15.00*	*17.00*	*gro.*
Cheap	*$5.00*	*6.00*	*7.00*	*gro.*

Straight Trimmers, &c.:
Best quality Jap....70@70&10%
Best quality, Nickel..60@60&10%
Fair quality, Jap....80@80&5%
Fair quality, Nickel..75@75&10%
Tailors' Shears....40@40&10%
Acme Cast Shears....40@40&5%
Heinisch's Tailor's Shears....10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list....30&10&5%
Grass....50&10%
Horse or Mule....50&10%

Tinners' Snips—
Steel Blades....20&5@20&10%
Steel Laid Blades....40&10@50%
Forged Handles, Steel Blades, Berlin....50%
Heinisch's Snips....40%
Jennings & Griffin Mfg. Co.'s, 6⅛ to 10 in....50%
Niagara Snips....40%
P., S. & W. Forged Handles....20%

Pruning Shears—
Cronk's Hand Shears....33⅓%
Cronk's Wood Handle Shears....33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00....25%
Disston's Pruning Hook only, ℔ doz. $12.00....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....40%
P., S. & W. Co....30%
Wilkinson Shear & Cutlery Co.:
Hedge, Wilcut Brand....60&10%
Lawn and Border, Wilcut Brand....60&10%

Sheaves—Sliding Door—
Stowell's Anti-Friction....50%
Reading....40%
R. & E. list....15%
Wrightsville Hatfield Pattern....87½%

Sliding Shutter—
Reading list....40%
R. & E. list....10%

Shells—Shells, Empty—
Brass Shells, Empty:
Climax, 10 and 12 gauge....65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union, League, 12 and 12 gauge; Rival Grade....25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge....20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%
Expert, 10, 12, 16 and 20 gauge, 33⅓&5%
Robin Hood, Low Brass....20&5%
Robin Hood, High Brass....30&5%
Indian, for Black Powder....25&5%

Shells, Loaded—
Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade....40&5%
Loaded with Smokeless Powder, high grade....40&10&10%
Robin Hood:
Smokeless Robin Hood, Low Brass....50%
Smokeless Comets, High Brass, 50&10&5%
Indian, Black Powder....40&5%
Winchester:
Smokeless Repeater Grade....40&5%
Smokeless Leader Grade...40&10&10%
Black Powder....40%

Shingles, Metal—Per Sq.
Edwards Mfg. Co.:

	Painted.	Galv.
14 x 20	$4.25	$6.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:

	Tin Painted.	Galv.
Dixie, 14 x 20 in.	$4.25	$5.50
Dixie, 10 x 14 in.	4.50	6.00
Dixie, 7 x 10 in.	5.00	6.75

Shoes, Horse, Mule, &c.—
F.o.b. Pittsburgh:
Iron....per keg. $4.10
Steel....per keg. $3.85
Burden's, all sizes....℔ keg $3.90

Shot—
25-lb. bag.
Drop, up to B....$1.95
Drop, B and larger....2.20
Buck....2.20
Chilled....2.20
Dust....2.40

Shovels and Spades—
Association List, Nov. 15, 1902..40%

Snow Shovels—
Long Handle....$2.75@$3.00
Wood and Mall. D. Handle, $3.25@$3.50

Sieves and Sifters—
Hunter's Imitation....gro. $9.50@10.00
Hunter's Genuine....per gro. $12.00@12.50
Buffalo Metallic Blued, R. M. Co., ℔ gr.

14&16	16&18	18&20
$13.20	$13.50	$14.40

Sieves, Seamless Metallic
—Per dozen.—

Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....doz. $0.90@0.95
Mesh 20, Nested....doz. $1.00@1.05
Mesh 24, Nested....doz. $1.30@1.40

Sinks, Cast Iron—
Painted, Standard list:
12 x 12 to 22 x 36 in....60%
20 x 40 to 24 x 50 in....50%
24 x 60 to 24 x 120 in....30%
Barnes' low list:
Up to and including 20 x 36 in....50%
20 x 40 to 24 x 50 in....45%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—
Cast Iron....70@75&10%
Steel....40@45%

Slates, School—
Factory Shipments.
"D" Slates....50@50&10%
Eureka, Unexcelled Noiseless..60&5 tens
Victor A, Noiseless..60&4 tens 45%

Slaw Cutters—See *Cutters.*

Snaps, Harness—
German....40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%....
High Grade, 40%; Trojan....40%
Jockey....25%
Oneida Community:
Harness Snaps, 1 inch....60&5%
Swivel Snaps....60%
Swivels....50%

Snaths—
Scythe....50%

Snips, Tinners—See *Shears.*

Spoons and Forks—
Silver Plated—
Good Quality....50&10@60&5%
Cheap....60@60&10%
International Silver Co.:
1847 Rogers Bros., 40&10%; Rogers & Hamilton....50&10%
Rogers & Bro., William Rogers' Eagle Brand....50&10%
Anchor, Rogers Brand....60%
Wm. Rogers & Son....60&10%

Miscellaneous—
German Silver....60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver....50%

Tinned Iron—
Teas....per gro. 45@50¢
Tables....per gro. $0.50@$1.00

Springs—Door—
Bardsley's Spring and Check....40%
Chicago (Coil)....40&10%
Gem (Coil)....30%
Pullman (Coil)....35%
Reliance (Coil)....40&10%
Star (Coil)....30%
Torrey's Rod, 39 in. ℔ doz. $1.10

Carriage, Wagon, &c.—
1¼ in. and Wider: Per lb
Black....4@4¼¢
Half Bright....4@4¼¢
Bright....4½@4¾¢
Painted Seat Springs:
1½ x 2 x 26....per pr. 42¢
1½ x 3 x 28....per pr. 70¢

Sprinklers, Lawn—
Enterprise....25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20....30%
Pleuger & Henger Mfg. Co.:
Cactus, 65&5%; Japanese, 70&5%; Nationals, 60&5%.

Squares—
Nickel plated..} List Jan. 5, 1900.
Steel and Iron..} 75@—%
Rosewood Hdl. Try Square and T-Bevels....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels....40&10@40&10&10%
Disston's Try Squares and Bevels, Rosewood Handle, 60&10%; Iron Stock and Bevel....15%
Winterbottom's Try and Miter, No. 1, 35%; No. 2....45%

Squeezers, Lemon
Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap....doz. $1.00
Good Grade....doz. $1.25
Tinned Iron....doz. $0.75@1.25
Iron, Porcelain Lined...doz. $1.75

Staples—
Barbed Blind....lb. 6@6½¢
Electricians', Association list..80&10&10&10%
Fence Staples, Plain, $2.25; Galvanized....$2.55
Poultry Netting Staples....per lb. 3¼@3½¢

Steels, Butchers'—
Dick's....30%
Foster Bros....30%
C. & A. Hoffmann's....40%

Steelyards—....30@30&10%

Stocks and Dies—
Blacksmiths'....50@50&10%
Curtis Ker'ble Ratchet Die Stock..25%
Derby Screw Plates....25%
Green River....25%
Lightning Screw Plate....25%
Little Giant....25%
Reece's New Screw Plates....25%

Stoners, Cherry—
Enterprise....25@30%

Stones—Oil, &c.
Chicago Wheel & Mfg. Co., 1904 list:
Gem Oil, Double Grit....65%
Gem Axe, Single or Double Grit..65%
Gem Slips....65%
Gem Razor Hones....50%
Pike Mfg. Co., 1904 list: ℔ lb.
Arkansas St. No. 1, 3 to 5½ in..2.80
Arkansas St. No. 1, 5½ to 8 in..3.50
Arkansas Slips No. 1....4.00
Lily White Washita, 4 to 8 in..60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in..50¢
Washita St., No. 1, 4 to 8 in..40¢
Washita St., No. 2, 4 to 8 in..30¢
Lily White Slips....90¢
Rosy Red Slips....90¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Washita Slips, No. 2....60¢
India Oil Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit....33⅓%
Quickcut Emery Rubbing Bricks 33⅓%
Hindostan No. 1, R'g'lar, ℔ lb 8¢
Hindostan No. 1, Small, ℔ lb 10¢
Axe Stones (all kinds)....
Turkey Oil Stones, Extra, 5 to 8 in....℔ lb 80¢
Queer Creek Stones, 4 to 8 in..20¢
Queer Creek Slips....40¢
Sand Stone....6¢

Scythe Stones—
Chicago Wheel & Mfg. Co.:
Gem, ₱ gro., 10 in., $8.00; 12 in., $10.80.
Norton Alundum Scythe Stones:
Less than 10 gross lots... ₱ gro. $6.00
Lots of 10 gross or more... ₱ gro. $4.50
Pike Mfg. Co., 1901 list:
Black Diamond S. S.. ₱ gro. $12.00
Lamoille S. S..... ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.00
Green Mountain S. S.. ₱ gro. $6.00
Extra Indian Pond S.S. ₱ gro. $7.50
No. 1 Indian Pond S.S. ₱ gro. $7.00
No. 2 Indian Pond S.S. ₱ gro. $4.50
Leader Red End S. S. ₱ gro. $4.50
Quick Cut Emery.... ₱ gro. $10.00
Pure Corundum..... ₱ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%
Stoppers, Bottle, Stops
Victor Bottle Stoppers..... ₱ gro. $9.00

Stops— Bench—
Millers Falls..... 15&10%
Morrill's, ₱ doz., No. 1, $10.00..... 50%
Morrill's, No. 2, $12.50..... 50%

Door—
Chapin-Stephens Co..... 60@60&10%

Plane—
Chapin-Stephens Co..... 20%

Straps— Box—
Cary's Universal, case lots.... 20&10&10%

Stretchers, Carpet—
Cast Iron, Steel Points, doz. 60@60&10%
Socket ..... doz. $1.80
Bullard, ₱ doz..... $4.00
Excelsior Stretcher and Tack Hammer Combined, ₱ doz. $6.00..... 20%

Woven Fence—
Franklin..... ea. $3.75

Strops, Razor—
Star Diagonal Strop..... 25%

Stuffer, Sausage—
Enterprise Mfg. Co..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%

Sweepers, Carpet—
National Sweeper Co.: ₱ doz.
Louis XV, Roller Bearing, Gold Plated $120.00
Hepplewhite, Roller Bearing, Silver Plated..... $72.00
Sheraton, Roller Bearing, N'kel. $60.00
Ye Mission, Roller Bearing, Oxidized Coppered..... $36.00
Transparent, Roller Bearing, Plate Glass top, Nickeled..... $36.00
National Queen, Roller Bearing, Fancy Veneers..... $27.00
Loyal, Roller Bearing, Veneers, Nickeled $25.00
Triple Medal, Roller Bearing, Nickeled $24.00
Marion, Roller Bearing, N'kel. $24.00
Marion Queen, Roller Bearing, Nickeled $21.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller Bearing, Jap.. $20.00
Perpetual, Regular B'r'gs, N'kel. $20.00
Perpetual, Regular B'r'gs, Jap.. $18.00
Monarch Extra (17 in. case), Roller Bearing, Nickeled..... $36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned..... $33.00
Auditorium (26 in. case), Roller Bearing, Nickeled..... $54.00
Mammoth (30 in. case), Roller Bearing, Nickeled..... $60.00

NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots.

Streator Metal Stamping Co.:
Eureka Japanned ..... ₱ doz. $15.00
Model E, Sanitaire..... ₱ doz $25.00
Model A, Sterling..... ₱ doz. $25.00
Model B, Sterling, Nickeled..... ₱ doz. $23.00
Model B, Sterling, Japanned..... ₱ doz. $21.00
Model C, Sterling..... ₱ doz. $21.50
Model D, Sterling..... ₱ doz. $19.50

Tacks, Finishing Nails, &c.
New List, May 1, 1905.
American Carpet Tacks.. 90&30%
American Cut Tacks..... 90&30%
Swedes Cut Tacks..... 90&30%
Swedes' Upholsterers'.... 90&40%
Gimp Tacks..... 90&40%
Lace Tacks..... 90&40%
Trimmers' Tacks..... 90&30%
Looking Glass Tacks..... 65%
Bill Posters' and Railroad Tacks, 90&40%
Hungarian Nails..... 80&20%
Finishing Nails..... 70%
Trunk and Clout Nails..... 80%

NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.

Miscellaneous—
Double Pointed Tacks..... 90¢ *or 5 tens*

See also Nails, Wire.

Tanks, Oil and Gasoline—
Each.

R. M. Co.: Gal.	Oil Emerald	Oil Queen City
30	$3.40	$3.65
60	$4.25	$4.50

Wilson & Friend Co.: Gal.	Gasoline	Oil
30	$2.75	$3.00
60	$3.50	$4.00
110	$5.00	$5.75

Tapes, Measuring—
American Asses' Skin .. 50@—%
Patent Leather..... 25@50&5%
Steel ..... $3 1-3&5%
Chesterman's ..... 25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin..... 40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin..... 40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather.... 25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—
Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $2.75@$3.00

Thermometers—
Tin Case..... 80&10@80&10&5%

Ties, Bale—Steel Wire—
Single Loop..... 80&2½%
Monitor, Cross Head, &c. 60&10@65%

Brick Ties—
Niagara Brick Ties..... 25&10%

Tinners' Shears, &c.—
See *Shears, Tinners', &c.*

Tinware—
Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.
See *Benders and Upsetters, Tire.*

Tools—Coopers'—
L. & I. J. White..... 20@20&5%

Hay—
Myers' Hay Tools..... 50%
Stowell's Hay Carriers, 50%; Hay Forks, 50%; Fork Pulleys, 50%.

Miniature—
Smith & Hemenway Co.'s, Davidson 25%

Saw—
Atkins' Cross Cut Saw Tools.... 35&5%
Simonds' Improved..... 33⅓%
Simonds' Crescent..... 25%

Ship—
L. & I. J. White..... 25%

Transom Lifters—
See *Lifters, Transom.*

Traps—Fly—
Balloon, Globe or Acme, doz. $1.15@$1.25; gro.....$11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—
Imitation Oneida..... 70&10%
Newhouse ..... 40@40&5%
Hawley & Norton..... 65%
Victor ..... 70&10%
Oneida Community Jump..... 50%

Mouse and Rat—
Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ₱ doz., $13.25; case of 24 ..... $11.50 doz.
No. 3, Rat, ₱ doz., $6.50; case of 50 ..... $5.75 doz.
No. 3½, Rat, ₱ doz. $5.25; case of 72 ..... $4.70 doz.
No. 4, Mouse, ₱ doz. $3.85; case of 150 ..... $3.00 doz.
No. 5, Mouse, ₱ doz. $3.00; case of 150 ..... $2.25 doz.

Trimmers, Spoke—
Wood's E 1..... 50%

Trowels—
Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 50%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ₱ gro. $6.00
Rose Brick and Plastering..... 25&5%
Woodrough & McParlin, Plastering. 25%

Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ₱ doz. $16.00
Grocery ..... ₱ doz. $15.00
Daisy Stove Trucks, Improved Pattern ..... ₱ doz. $18.50
McKinney Trucks..... each $19.00
Model Stove Trucks..... ₱ doz. $18.50

Tubs, Wash—
M'f'gr's list, price per gross.

No.	0	1	2	3
Galvanized, $64	*$76*	*$84*	*$96*	*10&5%*

Galvanized Wash Tubs (R. M. Co.):

No.	1	2	3	10	20	30
Per doz., net.	$5.70	6.30	7.20	6.60	7.20	8.10

Twine, Miscellaneous—
Flax Twine:
No. 9, ¼ and ½-lb. Balls.23@25¢
No. 12, ¼ and ½-lb. Balls.21@22¢
No. 18, ¼ and ½-lb. Balls.18@20¢
No. 24, ¼ and ½-lb. Balls.17@19¢
No. 36, ¼ and ½-lb. Balls.16@18¢
Chalk Line, Cotton ¼-lb. Balls ..... 26@31¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz..... 11@19¢
Cotton Wrapping, 5 Balls to lb., according to quality... 15½@23¢
American 2-Ply Hemp, ¼ and ½-lb. Balls..... 14½@15½¢
American 3-Ply Hemp, 1-lb. Balls ..... 15½@16½¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).10½@11½¢
India 3-Ply Hemp, 1-lb. Balls 10½@11½¢
India 3-Ply Hemp, 1½-lb. Balls 10@11¢
2, 3, 4 and 5-Ply Jute ... Balls ..... 12½@13½¢
Mason Line, Linen, ½-lb. Bls.47¢
No. 26½ Mattress, ¼ and ½-lb. Balls, according to quality, 30@60¢
Wool, 3 to 6 ply....B 9¢; A 10¢

Vises—
Solid Box..... 50&10%

Parallel—
Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co..... 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50.
Machinist and Tool Makers' No. 4A, $12.50; No. 6A, $10.00; No. 10A, $22.50.
Presto Quick Acting, Adjustable Jaw, 25@25&10%; Solid Jaw, 35@35&10%
Tiger Machinists'..... 40%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel..... 25%
Star, Solid Jaw..... 40%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&40&10%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher 40%
Perfect, 15%; Lightning Grip..... 15%
Merrill's 20%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Snediker's X. L..... 33⅓%
Stephens' 33⅓%

Saw Filers—
Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ₱ doz.... $4.50
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3..... 50%

Wood Workers—
Fulton Mach. & Vise Co.:
Reed 25%
Star 40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect..... 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—
Holland's Combination Pipe.. 60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.

Wads—*Price per M.*
B. E., 11 up..... 60¢
B. E., 9 and 10..... 70¢
B. E., 8..... 80¢
B. E., 7..... 80¢
P. E., 11 up..... $1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50
Dis. 15%
Ely's B. E., 11 and larger.$1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Ware, Hollow—
Cast Iron, Hollow—
Stove Hollow Ware:
Enameled ..... 45&10%
Ground ..... 50&5%
Plain or Unground..... 60%
Country Hollow Ware, per 100 lbs. $3.00
White Enameled Ware:
Maslin Kettles..... 65&10%
Covered Ware:
Tinned and Turned..... 35&10%
Enameled ..... 45&10%
See also *Pots, Glue.*

Enameled—
Agate Nickel Steel Ware..... 60%
Iron Clad Ware..... 70&10%
Lava, Enameled..... 40&10%
Never Break Enameled..... 50%

Tea Kettles—
Galvanized Tea Kettles:

Inch.....	*6*	*7*	*8*	*9*
Each	*45¢*	*50¢*	*55¢*	*65¢*

Steel Hollow Ware—
Avery Spiders and Griddles.. 65@65&5%
Avery Kettles..... 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles..... 60%
Solid Steel Spiders and Griddles. 65&5%
Solid Steel Kettles..... 60%

Warmers, Foot—
Pike Mfg. Co., Soapstone.... 40@40&10%

Washboards—
Solid Zinc: ₱ doz.
Crescent, family size, bent frame. $3.70
Red Star, family size, stationary protector $3.70
Double Zinc Surface:
Saginaw Globe, family size, stationary protector..... $3.25
Cable Cross, family size, stationary protector..... $3.40
Single Zinc Surface:
Naiad, family size, open back, perforated $2.90
Single Saginaw Globe..... $2.75
Brass Surface:
Brass King, Single Surface, open back $3.65
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.65
Glass Surface:
Glass King, Single Surface, open back $3.65
Enamel Surface:
Enamel King, Single Surface, ventilated back..... $3.65

Washers—Leather, Axle—
Solid ..... 80&10@80&10&10%
Patent ..... 90@90&5%
Coil: ¾ 1 1¼ 1½ Inch.
10¢ 11¢ 12¢ 14¢ per box

Iron or Steel—
Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.90 5.00 3.70 3.50 3.30
The above prices are based on $5.50 off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—
Over ½ inch, barrel lots..... per lb. 1¾@2¢

Weather Strip—
Flexible Felt—
Lined, per 100 ft., $2; $3; $4..... 40&10%
Moore's Unlined, per 100 ft., $2; $3; $4 ..... 50&10%

Wedges—
Oil Finish..... lb. 2.70@2.80¢

Weights—Hitching—
Covert Mfg. Co..... 30&2%

Sash—
Per ton, f.o.b. factory:
Eastern District..... $30.00
Southern Territory.$23.00@$24.00
Western and Central Districts ..... $22.00@$28.00

Wheels, Well—
8-in., $1.55; 10-in., $2.00; 12-in., $2.50; 14-in., $4.00.

Wire and Wire Goods—
Bright and Annealed:
6 to 9..... 80%
10 to 18..... 80&2½%
19 to 26..... 80&7½%
27 to 36..... 80&2½%
Galvanized:
6 to 9..... 75&5%
10 to 14..... 75&7½%
15 to 16..... 72½&10&2½%
19 to 26..... 75%
27 to 36..... 72½%
Coppered:
6 to 9..... 75&5%
10 to 14..... 75&7½%
15 to 18..... 72½&10&2½%
19 to 26..... 75&10&5%
27 to 36..... 75%
Tinned:
6 to 14..... 75&10&2½%
15 to 18..... 75&7½%
Brass..... 24¢ *lb., base*
Copper ..... 32¢ *lb., base*
Cast Steel Wire..... 50%

Spooled Wire—
Annealed and Tinned, 70&10@75&10%
Brass and Copper.. 60&10@65&10%
Retailers' Assortments, per box, $2.25@$2.50

Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—
Steel Wire Goods..... 90&10%
Brass Wire Goods..... 85&25%
Brass Cup and Shoulder Hooks, 80&15%

Wire Cloth and Netting—
Galvanized Wire Netting ..... 80&2½@80&7½%
Painted Screen Cloth, 100 ft., $1.30
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft..3½¢
Nos. 4 and 5 Mesh, sq. ft..3½¢
No. 6 Mesh, sq. ft..... 3½¢
No. 8 Mesh, sq. ft..... 4½¢

Wire, Barb—See *Trade Report*

Wrenches—
Agricultural ..... 75@75&10%
Alligator or Crocodile.. 70&10@75%
Baxter Pattern S Wrenches... 70&5@70&10%
Drop Forged S..... 45@45&5%
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog.. 70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut..... 50%
Combination Black..... 40&5%
Merrick Pattern..... 50%
Boardman's 40%
Coes' Genuine Knife Hdl.. 40&10&5&5%
Coes' Genuine Steel Hdl.. 40&10&5&5%
Coes' Genuine Key Model.. 40&10&5&5%
Coes', Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'".... 40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle 70%
Elgin Wrenches, ₱ doz..... $6.25
Elgin Rethreading Attachment, only with one die, ₱ doz..... $6.25
Elgin Extra Dies, ₱ doz..... $3.00
Elgin Extra Jaws, ₱ doz..... $1.75
Elgin Monkey Wrench Pipe Jaws, ₱ doz..... $2.10
Gem Pocket..... 70%
Hercules 70%
W. & B. Machinist:
Case lots..... 50&5%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W..... 50&5%
Stillson 65%
Vulcan Chain..... 50%

Fruit Jar—
Triumph Fruit Jar Wrench, 5 gross lots, ₱ gross, $7.50; ₱ doz..... $0.80

Wrought Goods—
Stables, Hooks, &c., list March 17, '02..... 87½&87½&10%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers' & Freighters'..... list net

Zinc—
Sheet.....per 100 lb., $8.50@$8.75

For the Table of "Current Metal Prices" see the First Issue of Every Month.